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EMERGENCY PREPAREDNESS IN THE WASHINGTON METROPOLITAN AREA

HEARINGS

BEFORE THE

SUBCOMMITTEE ON
GOVERNMENTAL EFFICIENCY
AND THE DISTRICT OF COLUMBIA

OF THE

COMMITTEE ON
GOVERNMENTAL AFFAIRS
UNITED STATES SENATE

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EMERGENCY PREPAREDNESS IN THE WASHINGTON METROPOLITAN AREA

WEDNESDAY, MARCH 16, 1983

U.S. SENATE,
SUBCOMMITTEE ON GOVERNMENTAL EFFICIENCY
AND THE DISTRICT OF COLUMBIA,
COMMITTEE ON GOVERNMENTAL AFFAIRS,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:10 p.m., in room SD-342, Dirksen Senate Office Building, Hon. Charles McC. Mathias, Jr., chairman of the subcommittee, presiding.

Present: Senator Mathias.

Staff present: William Leonard, staff director; Monica Healy, professional staff member; and Sandi Muschette, chief clerk.

OPENING STATEMENT OF SENATOR MATHIAS

Senator MATHIAS. The subcommittee will come to order.

I regret that we are a few minutes late in starting, but I regret even more that nothing on Capitol Hill is working today exactly the way it is supposed to work. We will proceed, I hope, without further interruption.

A Nation's Capital is a very unique place. It is the stage upon which state events are acted out. It is the national command center. It is an expression of pride in national achievement, in art, and in architecture. It is a treasure house of historic relics of the Nation's history. It is an office complex. It is a tourist mecca. And, not least, it is the place where people, not just Presidents but people, live their lives and carry on their individual work.

This Capital, this national city, Washington, lies in the Potomac River basin. The Potomac River basin, of course, is composed of parts of four States and all of the District of Columbia, land drained by the Potomac River and its tributaries. That contains more than 30 counties, myriad local governments, special districts, all part of the Potomac River basin. It has a special interest to the Federal Government.

Now, this hearing is the first of a series at which we will seek to develop an overview, not just of the city of Washington, the asphalt streets of this city, but of the Potomac River basin and of the relationships among its various governments and of how these governments coordinate with the Federal Government and the role that the basin can play in setting an example for other water basins in the country.

At the hearings today on emergency preparedness in the Washington metropolitan area, we will examine the capability of each jurisdiction in the Washington metropolitan area to respond to emergencies individually. But we will focus on the more important ability of each jurisdiction to respond in cooperation with the others.

The subcommittee will hear from a wide spectrum of witnesses, including emergency preparedness experts and policymakers throughout the metropolitan area.

The Congressional Research Service has identified over 200 incidents that took place in the Washington area between 1975 and 1982 which could be classified as potential or actual emergency situations.

[The material follows:]

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41 Va. roads closed by floods	7/19	B3
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Electric locomotive on test run derails	2/25	C6
13 cars of Chessie freight train derail	9/9	C2

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1976

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Senator MATHIAS. Some of these incidents resulted in relatively few losses, but others were very costly both in terms of lives and in terms of property, and the causes and effects of these and of other disasters varied very widely.

No one who was in Washington in the summer of 1968 will ever forget the riots in Washington following the assassination of Dr. Martin Luther King. In those troubled and terrible days, the help provided by Federal troops and by fire departments in both Maryland and Virginia enabled the District of Columbia to cope with an explosive situation.

The importance of regional cooperation again became evident during the natural gas crisis of 1977, when Washington residents faced a severe shortage of natural gas supplies. Local officials, using the framework of a 1975 Council of Governments plan, were able to respond to the emergency effectively.

Following the crisis, Mayor Walter Washington noted before a subcommittee of the House District of Columbia Committee that the recent experiences this winter did indicate that better coordination should be maintained between the States of Virginia and Maryland, as well as the District of Columbia. He went on to cite the need for a more coordinated approach among the various Federal agencies involved in the national emergency preparedness.

Since that time, the Federal Government has improved the situation somewhat by setting up the Federal Emergency Management Agency. But for local jurisdictions that rely on FEMA's resources in times of emergency, I think there is still room for improvement.

The third episode that shows the valuable service that can be provided by private citizens in an emergency was the 1976 flood which swept through my home town of Frederick, MD. It forced local officials to evacuate 200 persons. Telephone service was disrupted. The amateur radio club in the area rose to the occasion, and volunteers continued to transmit messages in and out of Frederick until telephone service was restored.

Finally, the need for regional cooperation was tragically underscored by the twin disasters that occurred during the snowstorm of January 13, 1982. As we all remember, there was a nearly simultaneous crash of Air Florida flight 90 and the Metrorail derailment.

Coping with these accidents was made especially difficult by the early dismissal of Federal employees due to weather conditions. These disasters shocked the public into an awareness of the importance of emergency management, and they spotlighted the difficulty that jurisdictions have using the rescue resources in a coordinated manner despite the existence of well thought-out, well considered emergency management plans in many of the jurisdictions.

The January 13 tragedies prompted COG to study emergency preparedness in the area. The study concludes with 72 recommendations for strengthening the region's ability to respond to emergencies in a coordinated fashion.

The work of COG, I think, serves as an important catalyst for taking concrete steps to improve our region's emergency preparedness procedures.

The stage has been set, and it is incumbent upon us to do everything possible to ensure that the momentum for change engendered by these disastrous events does not slacken.

The natural gas crisis of 1977 and the events of January 13, 1982, have shown that emergency response officials, like actors, need cues and they need scripts. Emergency management plans, if carefully crafted and coordinated, could serve as a script for local officials to give appropriate cues to the other jurisdictions in times of emergency.

It is almost inevitable that when you have a disaster, you are going to have some degree of chaos, some degree of confusion, and that inevitability makes it imperative that by advance emergency planning, we reduce the administrative confusion to the absolute minimum that is possible.

Today I hope we can address this vital need and continue the progress that has been made toward reaching the goal of emergency preparedness in the Potomac basin.

To that end, I will call upon the first of our panels of witnesses, representatives of the General Accounting Office and the Metropolitan Washington Council of Governments, which are organizations that have both conducted independent assessments of emergency capabilities in the area.

We are very happy to welcome today Mr. William Anderson, director of the General Government Division of the General Accounting Office, who will speak on behalf of the GAO, and Mrs. Ruth R. Crone of the Department of Human Resources of the Council of Governments.

Do you have any wishes as to who will go first?

Mrs. CRONE. Mr. Anderson may start.

Mr. ANDERSON. Thank you.

Senator MATHIAS. This, you see, was an emergency decision that we had not made in advance. [Laughter.]

TESTIMONY OF WILLIAM J. ANDERSON, DIRECTOR, GENERAL GOVERNMENT DIVISION, GENERAL ACCOUNTING OFFICE, ACCOMPANIED BY ALBERT DE FAZIO, AUDIT MANAGER, GAO; AND RUTH R. CRONE, DIRECTOR, DEPARTMENT OF HUMAN RESOURCES AND PUBLIC SAFETY PROGRAMS, METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS, ACCOMPANIED BY L. KIRK JOHNSON, ASSISTANT DIRECTOR FOR PUBLIC SAFETY, AND DINESE F. DRAKE, SENIOR PUBLIC SAFETY PLANNER

Mr. ANDERSON. Good afternoon, Mr. Chairman. I am Bill Anderson, with GAO. To my left is Albert De Fazio, who is an audit manager in charge of this particular work which we did in response to your request.

I would like to request that our full statement be put in the record, and I will briefly summarize it here.

Our objectives in responding to your request were to gather information on whether the selected jurisdictions had emergency preparedness plans. We were also to determine the extent of coordination involved in developing the plans, whether the plans were designed to deal with multiple disasters and interjurisdictional disasters, whether the jurisdictions' plans contained data on personnel, equipment, and supplies available for use during an emergency, and whether the jurisdictions believed that their equipment was adequate and up to date.

We also obtained certain information you requested on the January 13, 1982, disasters.

As you know, we obtained information from Montgomery and Prince Georges Counties in Maryland, the District of Columbia, and the Virginia jurisdictions of Arlington and Fairfax Counties and the cities of Alexandria, Falls Church, and Fairfax.

We discussed emergency preparedness with the Council of Governments, Metro, U.S. Park Police, FEMA, and FAA.

Our work showed that all the jurisdictions had a plan, that each plan had been recently or was currently being revised, but that there is little interjurisdictional coordination in the preparation of the plans. The plans generally did not address multiple disasters or interjurisdictional disasters. Some plans contained data on personnel and equipment available for a disaster. Few contained information on emergency supplies.

In most cases, jurisdictions believe their personnel and equipment are adequate to deal with emergencies. Responses concerning the January 13, 1982, disasters varied by jurisdiction, depending on the degree of the jurisdiction's involvement.

I believe it is safe to say that the tragic events of that day raised the awareness of all metropolitan area jurisdictions of the need for coordinated emergency preparedness plans to deal with multiple or interjurisdictional disasters. Our work showed that the eight jurisdictions were in the process of revising or had completed revisions of their plans.

In this connection, the Council of Governments that you referred to took a leadership role in dealing with emergency preparedness on a regional basis. I understand that Mrs. Crone will discuss the status of their efforts in her testimony today.

I would also like to point out that COG has been significantly involved in emergency preparedness in the past and has sponsored several efforts which represent the major coordination mechanisms in place in the jurisdictions today.

Regarding planning, one characteristic that came through clearly is that each jurisdiction's plan is intended to deal, first and foremost, with problems in its area. Mutual aid agreements are the basic coordinating mechanism between jurisdictions. These agreements are uniform throughout the area and represent one of the areas in which COG has been very active. The agreements are looked upon by jurisdictions as a means whereby additional resources can be brought to bear in the event of a disaster.

In most instances, other than the mutual aid pacts, there has been no significant coordination between jurisdictions in the development or revision of emergency preparedness plans.

I mentioned earlier that since the January disaster, many jurisdictions had completed or were revising their plans.

Senator **MATHIAS**. Mr. Anderson?

Mr. **ANDERSON**. Yes, sir?

Senator **MATHIAS**. May I interrupt you just for a moment?

Mr. **ANDERSON**. Certainly.

Senator **MATHIAS**. I have an urgent phone call. I will be right back.

[Short recess taken.]

Senator **MATHIAS**. I apologize, but emergencies affect even a hearing on emergencies.

Mr. Anderson, will you continue?

Mr. **ANDERSON**. Thank you, sir.

I mentioned earlier that since the January 1982 disaster things have been happening. First, many jurisdictions have either completed their planning or have completed revising the plans that they had in place at that time.

We have been told that a communication problem experienced on that day between the District and Arlington County has been resolved. Some problems which came to light during the Metro derailment have been addressed. Solutions have been tested and problems corrected, according to Metro officials.

The improvements can best be described by them, but they involve improved communications from the tunnels, a third-rail warning device, and an evacuation cart. Also, since January 13, 1982, COG, through its Public Safety Committee and the various subcommittees, has issued a 72-recommendation report and adopted an action plan to implement these recommendations, all of which point toward improved emergency response capability in the Washington metropolitan region.

National Airport has obtained a 22-foot rescue boat, a 40-foot icebreaker, and an additional air boat and two "Billy Pugh" nets, one of which was given to the U.S. Park Police. Finally, direct communication lines have been established by the airport with the District and Arlington County.

The question remains, Where are we now? The matrix attached to my testimony summarizes the jurisdictions' responses to the questions we posed. Perhaps the major issue is what form should an emergency preparedness plan for this unique area take. Should each jurisdiction continue to strive to develop its own plan, designed primarily to protect its own jurisdiction? Or should there be some overall plan to deal with the region as a whole? This is an obvious question that should be addressed in setting the framework for emergency preparedness plans.

Let me conclude by summarizing what we think needs to be done at this point.

There is a need for uniform disaster planning standards across the area, a need for a coordinated strategy for dealing with major disasters requiring interjurisdictional response, a need for an SOP that will drive how Federal resources will be brought to bear in local emergencies.

The comments that we received from some of the jurisdictions indicate that there are still lingering communication problems.

Finally, let me close by pointing out the good things that have happened over the last year. I spoke of the new equipment that has been brought to bear by National Airport and the Park Police as well as others.

Second, the jurisdictions have developed and tested a set of procedures for dealing with Metro accidents. And, perhaps most importantly, the Council of Governments is providing important leadership in addressing the coordination problems of the past.

That concludes my comments, Mr. Chairman.

Senator MATHIAS. Thank you very much.

Mrs. Crone, you may give your statement.

Mrs. CRONE. Mr. Chairman and committee members, ladies and gentlemen, thank you for the opportunity to appear before you and discuss the activities of the Metropolitan Washington Council of Governments in connection with emergency preparedness.

I have submitted for the record a lengthy testimony addressing the findings and recommendations of COG's Emergency Response Task Force, the response of the local officials to the metropolitan effort, and a status report on the implementation effort now underway.

Today I will briefly summarize the testimony and, with the assistance of Kirk Johnson, our assistant director of public safety, and Dinese Drake, senior public safety planner at COG, we will try to respond to any questions you may have.

COG, as you know, is a voluntary association of the local governments in the Washington metropolitan area. Employing a consensus-building approach, the COG forum provides an arena for the identification, debate, and conciliation of problems which cross-cut jurisdictional boundaries and require reciprocity of policy and action by local governments.

The solutions to area-wide, interjurisdictional problems are seldom, if ever, simple. They must comply with existing relevant laws and ordinances; they must not result in disproportionate adverse impact on any one or several local jurisdictions; and they must, at the same time, provide substantial remedy to the problem.

In the area of public safety, the problems associated with emergency preparedness have an additional dimension, which is the reactive or responsive nature of the services. These agencies, including police and fire, are the most highly visible of all local government agencies. They deal with emergencies on a day-to-day basis.

As a matter of regional concern, the emergency preparedness activities at COG focus on the development of a framework for intergovernmental response and guidelines for interjurisdictional actions during the diverse incidences which present a significant threat to, or disruption of, the public safety.

Plans and agreements which are developed must meet the criteria previously mentioned and must also be sufficiently flexible to apply to local operations as well as to the multi-agency and multijurisdictional response.

Activities to strengthen and improve metropolitan emergency response management have been under way through COG since February of last year.

First, let me give you an overview of the task force recommendations.

The COG Board appointed the Metropolitan Emergency Response Task Force in February 1982. The report of the task force was approved by the COG Board on June 9, 1982.

The mission of the task force was to examine the emergency response actions and activities associated with the emergency conditions of January 13, 1982, and develop recommendations to strengthen the region's emergency response capability.

The task force report, which I have provided to the committee, is divided into two sections, planning and organization and emergency response.[1]

In the section on planning and organization, the recommendations address these three areas: metropolitan planning, training and manpower development, and mutual aid agreements.

The section on emergency response contains recommendations on eight basic areas or components of emergency response. These components are: (1) notification and alert; (2) the general nature of the response to disaster; (3) mobilization of resources; (4) pre-hospital emergency medical service response; (5) incident command and control; (6) air response command and control; (7) communication; and, (8) regional hospital response.

The report contained a total of 72 recommendations. After the COG Board approved the task force report, letters were sent out seeking support and endorsement of the approach. Requests went to all COG member jurisdictions, the Congressional delegation of metropolitan Washington, regional agencies, and relevant Federal agencies.

In response to the requests for support and endorsement of the efforts, letters were received from the following: the District of Columbia, Fairfax County, Montgomery County, Prince Georges County, Arlington County, Prince William County, the city of Alexandria, the city of Bowie.

Additionally, D.C. Mayor Barry, Governor Hughes of Maryland, Governor Robb of Virginia, Senator Mathias of Maryland, Congressman Barnes of Maryland, and Congressman Parris of Virginia, the Washington Metropolitan Area Transit Authority, the Federal Department of Transportation, the Federal Emergency Management Agency, the Department of the Interior, and four area hospitals, including St. Elizabeths, Walter Reed Army Medical Center, Circle Terrace Hospital, and the Greater Southeast Community Hospital, and the D.C. Hospital Association responded.

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[1] See p. 66.

Based on the recommendations, an action plan was developed and approved by the COG Board in January of this year. Formal endorsements for the action plan itself are now being solicited from the same group of participants I mentioned previously.

We are in the fifth month of implementation and basically on schedule with the work.

The action plan which was approved by the COG Board in January was accompanied by a proposal to finance its provisions with funds from COG, funds and assistance from the Federal Aviation Administration, the National Highway Traffic Safety Administration, the Federal Emergency Management Agency, the Department of Interior, the Department of Health and Human Services, the District government, and the State governments of Virginia and Maryland.

Individually, the local governments contribute financially on an in-kind basis through the dedication of their personnel to this effort, and the time dedication has been significant.

The COG budget for the current year, and the one approved in December for fiscal year 1984, already include $86,777 as its share of a proposed budget of $286,777 for this 24-month effort.

As I have stated, we are requesting in letters to the relevant Federal agencies financial support and commitment of other resources to this effort. One area in which we are especially hopeful that help will be forthcoming is in the area of communications. We have proposed that FEMA provide funds for a technical consultant study of the region's disaster communications capabilities. The estimated cost is $45,000.

COG does not have an in-house communications design engineer or specialist, and although the local system operators can articulate problems with their equipment and its shortcomings, an overall regional assessment is beyond our existing capabilities.

We have worked to address the "people problems" which can be solved by better procedures and guidelines for operating, but in the technical areas we need consultant help, and we will look toward Federal assistance for this.

In other areas where special expertise is needed, we have also sought Federal assistance. The FAA has provided a rotocraft specialist to assist in development of the air response, command and control portion of the plan. This specialist met for the first time this week with the providers of helicopter services in the region, including Maryland State Police, Virginia State Police, Metropolitan Police Department, U.S. Park Police, and Fairfax County Police Department. We will be seeking additional representation from the Military District of Washington and other appropriate military sources as the work gets under way.

In addition to their involvement on the Air Response, Command and Control Technical Committees, the U.S. Park Police, including Chief Lynn Herring and his staff, have been actively involved in other aspects of this effort, including the agreement and other action plan implementation efforts.

The financial plan proposes support from the National Highway Traffic Safety Administration for the emergency medical services component of the regional interhospital communication network which is needed.

As I have stated, these letters requesting assistance are now being transmitted, and we hope for a rapid, positive response, not only from the Federal agencies but from the three States from whom assistance has been requested, and continuing strong support from area local governments.

Although we are only 5 months into the overall effort, significant accomplishments have been made to date, and I would like to relate these for you. They include:

The extension of the Washington National Airport emergency operations secondary response area;

Development of a notification procedure for use after the decision has been made to release governmental employees in response to severe weather conditions in the metropolitan area;

Execution and a command and control exercise for Potomac River incidents;

Execution of a mid-river Metro tunnel disaster drill for response to incidents in the Metro subway system;

Development of a mass casualty disaster plan by the District of Columbia;

Initiation of disaster response management teams and disaster plan revisions in area local jurisdictions;

Authorization for the Fairfax County Police Department to obtain and operate round-the-clock helicopter service, this to be operational by April of 1983;

Standardization of disaster and operational testing procedures for police and fire mutual aid communications;

Coordination with jurisdictions outside the metropolitan Washington area, including parts of Pennsylvania, for use of common mutual aid frequencies during disasters. This includes tone code alert designation and procedures;

Initial work on standardization terminology for equipment, personnel, and procedures relative to disaster response;

Work by area hospital associations and councils to develop a system for interhospital communication during disasters;

Drafting of memorandum of agreement for use of mutual aid channels in disaster;

Pilot testing of a multijurisdictional firefighter training module on coordinated responses;

Pilot testing of a multijurisdictional training program for mid-level fire officials;

Development of preliminary performance specifications for mobile command vehicles;

Development of performance objective for firefighter long-term breathing gear for response to Metro incidents;

Development of specifications for Metro emergency hand carts for evacuating the injured and transporting supplies and equipment in the tunnel;

Preliminary development of on-scene command and control identification procedures;

Development of recommendations on Metro-related disaster medical supplies;

Development of a change-of-command procedure for use at the scene of a disaster; and

Development of an incident management team concept for use at the scene of a disaster.

I think these are quite a few achievements for the short period that we have been underway.

Finally, major revisions to the existing police and fire and rescue mutual aid agreements and their operational plans are under examination. The possibility of a joint mutual aid agreement for both police and fire-rescue services has been raised and is being considered. Detailed operational plans have been drafted and are now under review.

I have provided an overview of the COG recommendations, a description of the support and commitment demonstrated thus far, and a description of the consolidated funding proposal for development of a regional emergency response management plan.

I would like to close by offering two suggestions for additional involvement of this subcommittee. Two supportive measures which could be taken by this subcommittee include: First of all, encouraging the relevant Federal agencies to provide support as requested in the financial plan and the action plan; and, second, assisting in the identification of a single point for coordinating Federal and military liaison efforts in this program to improve the region's response capabilities.

I thank you for the opportunity to testify. My colleagues and myself will be happy to answer any questions.

Senator MATHIAS. Thank you very much.

Let me ask you this. In Mr. Anderson's statement, he refers to an incident where there was a local jurisdiction which spent 4 to 6 hours telephoning, desperately trying to borrow ambulances from a military installation during a snowstorm.

The National Transportation Safety Board has recommended that the District maintain better firefighting and telephone equipment in the Third Street tunnel.

In your judgment, do all the local jurisdictions actually know where resources are located so that they can immediately direct an appeal to the right spot to obtain those resource in the event of an emergency that makes them necessary?

Mrs. CRONE. Mr. Johnson of our staff has been responsible during the last year in assisting those groups in developing an inventory. I would like him to respond to that.

Mr. JOHNSON. Ms. Drake will respond.

Ms. DRAKE. I am Dinese Drake with the Council of Governments.

I think that to make a judgment about where certain resources are—well, first of all, all the local jurisdictions know where their own are, obviously. COG has provided a resource directory that was published in, I believe, March of last year. The data are a little over a year old. It was provided to both police and fire services in the area. It covers both their equipment and personnel resources and was to be housed in the communications centers. This directory will help them find the kinds of equipment that they need in an emergency.

Senator **Mathias**. Does that include just the resources of the member governments of COG, or does that include, say, military installations in the area?

Ms. **Drake**. No, sir. That includes only the member jurisdictions of COG.

Senator **Mathias**. So if you were faced with a disaster of a big enough order of magnitude that you needed the military equipment—ambulances, firefighting, whatever—the average policeman and the average fireman would not necessarily know whom to call.

Ms. **Drake**. Their dispatch centers would probably be more up to date than they would be, but we have begun, also, in connection——

Senator **Mathias**. What is "more up to date"?

Ms. **Drake**. The information which is at their EOC's, their emergency operations centers.

Senator **Mathias**. No, but I mean, you say they would be more up to date. Is that up to date on an annual basis or on a semiannual basis? If the military changes its disposition of forces and moves things from Fort Meade to Fort Belvoir or vice versa—it seems to be more the one way than the other, but nonetheless, they do move around—who really knows?

Mr. **Johnson**. Senator, if I might respond, at this point, our regional effort as far as collecting information and resources is concerned does not cover all Federal and military resources in this area.

Senator **Mathias**. Well, then, that leads to this question. What is needed from the Federal Government, and what responsibilities do you think the Federal Government has in this kind of an emergency? Let me ask you that first and then ask Mr. Anderson what he thinks about that.

Ms. **Drake**. I think the most important thing we need at this point is designation of a single point for coordinating our regional activities.

The local governments are working together extraordinarily well on this project. In the 10 years that I have been involved with public safety people in this region, I have never seen anything like it. But it is very hard to interface with something that is so amorphous.

Something that could be really helpful is if we had a single point to go to and to know that, on the other end, there is somebody performing a COG function on the Federal side.

Senator **Mathias**. What do you think the responsibility of the Federal Government is?

Ms. **Drake**. Well, I will defer to Mr. Johnson. [Laughter.]

Mr. **Johnson**. Senator, as far as emergency preparedness and planning are concerned, several Federal agencies do work with the various technical committees that we have under congressional law or general orders on various responsibilities in the metropolitan area.

There is no clear point from which all of this activity is coordinated for this metropolitan area. That is one of the things we would be seeking, and that is a designation of one agency which could kind of sort out these mandates and work with the local governments as the one prime point where that kind of discussion could take place, instead of having to deal with each individual agency.

Senator **Mathias**. Of course, the Air Florida disaster, for that purpose, is not a typical example, because it happened literally right on the doorstep of the Pentagon, and I am sure it had the attention of everybody from the Secretary of Defense down. But if it had happened over on Anacostia Creek out of sight somewhere, it might have been a very different situation.

One of the questions on Mr. Anderson's chart, the GAO study, was, Is the availability of Federal equipment known? There is a mixed bag, but the District of Columbia answered no, they do not know where Federal equipment is, and that seems to me to be a serious drawback.

Mr. Anderson, how would you answer those two questions?

Mr. **Anderson**. I would say that the local jurisdictions have a need for greater visibility over what is available at all the military facilities that we have in this area. I don't know exactly what mechanism might be established to get it, but I would say that the local jurisdiction and, in particular, the incident commander, ought to really know, even beyond what the jurisdictions have, because I think in some areas the military would have more advanced and perhaps different equipment than might be available to local fire departments or police.

So there is a need to make that visible to the jurisdictions. I think the point was well made by the Council of Governments representative that there has to be a mechanism for the local jurisdiction to get in touch with somebody in the military that can make it happen. So maybe there ought to be a focal point on the military side representing all of the services and facilities in the area.

Senator **Mathias**. What do you think the real responsibility of the Federal Government is here? At what point does the local government recognize that this is bigger than it can handle and that it needs some help and that the only source of help is the Federal Government? At what point do you think the Federal Government has a duty to step in here and help?

No. 1, I supposed, when they are asked. [Laughter.]

But it seems to me that if you are going to say that there is that much responsibility to help when you are asked to help, then you have to at least prepare for the kind of level of emergency at which that request is likely to come.

Mr. **Anderson**. You raise a very good point, sir. I am sure that our people here at the Council of Governments, who are the current coordinating group, are making note of this. I think the point you are making is that perhaps even some further involvement by the military, at least, in developing an area-wide strategy, might be suggested. But again, perhaps that is going on to some extent.

Senator **Mathias**. I would hope—God forbid—that we will not have another flight 90 situation or similar situation. And let me pay tribute to the military who stepped in at that time. I have just total respect for the divers who went down in that river, and it is a tribute to their military training and to the fact that they were able to perform a mission under the most difficult conditions.

But I think at least we have surfaced one area in which perhaps this committee can be of some help in bringing the parties together.

Let's turn back to the riots of April 1968. I was on the streets of Washington through that night, and I remember, oh, sometime between 2 and 3 o'clock in the morning, being up on 14th Street and watching a fireman put a ladder up against a burning building. He then went into a room from which flames were already beginning to pour out, and looked for a woman that a man on the street thought was trapped in that room. The kind of bravery that it took for that fireman to just walk into a room that was already engulfed in flames has been something that I have never forgotten. I have always been an admirer of firefighters, but I became an ardent admirer of firefighters after that night just because of the acts of bravery that i witnessed. They were commonplace that night.

Many of those firemen came from Virginia; many of them came from Maryland. They came in because they were needed.

Are the mutual aid agreements that are now used a good basis on which to improve regional coordination and to create perhaps a region-wide plan? Do the individual agreements, the mutual aid agreements, adequately delegate responsibility and identify the roles of the different jurisdictions and provide for a sharing of responsibility for mutual aid?

In other words, are they sufficient as they are today? If so, are they a foundation for a broader regional agreement of some kind?

Mr. ANDERSON. I guess our view, sir, is that they certainly are a good foundation. What they probably lack is the kind of specificity that I gather COG is driving for right now in its latest attempt to bring the local jurisdictions together.

Those agreements were in place back in the times of trouble that we had earlier, and they undoubtedly succeeded in bringing equipment to bear in a hurry. But I think that they fall short in representing the type of coordinated planning and response planning that we believe is necessary.

Senator MATHIAS. How would COG respond to that?

Mr. JOHNSON. I could echo those comments. I think our local governments now use COG as a forum, the regional forum, and they have found the police and fire mutual aid agreements to be very useful out of their experience.

The recommendations of the task force, which was made up of all local governments in this area, identified and recognized that there needed to be a broader plan, more of an operational plan; more of a script, should you say, as far as coordinating efforts across jurisdictional lives, still covering the legal problem of requirement for some kind of a mutual aid, tristate, multijurisdictional area, but to expand the operational plan so both police and fire knew what the script was, what is required, when you go into a multijurisdictional incident. That is what we are working on right now.

Senator MATHIAS. You don't think, at this moment, that the police and firemen who are actually going to be responding are clear as to what their responsibilities are?

Mr. JOHNSON. Yes, sir, they are clear as to what their responsibilities are. What we are talking about now is expanding the operations plan so that it is clear. As you mentioned earlier, in any incident, things get very confusing, and if you can train on a broader spectrum of activities, based on an expanded operations plan, you have that much better assurance of having clarity of command and control at the scene of any incident, and that is what we are working on right now.

Senator **Mathias**. What mutual aid agreements have been signed with Federal agencies?

Mr. **Anderson**. We in GAO are not aware of any such agreements. I would defer to the Council of Governments here.

Mr. **Johnson**. The Council of Governments has never signed any mutual aid agreements with any Federal agencies. Various local jurisdictions have, based on their location and the location of those Federal agencies. Those are usually specific jurisdictions with specific agencies. But I would have to defer to the local jurisdictions on that.

Senator **Mathias**. Do you have any record of that? Is there any central spot where those agencies are recorded?

Mr. **Johnson**. Not at this time.

Senator **Mathias**. Should there be? I am not interested in making a lot of paperwork. One more set of records that is not needed can be dispensed with.

Mr. **Johnson**. We tend to feel the same way, Senator. There are an awful lot of agreements and plans. You can pile them all up. But we are really looking for something that is kind of simplified and clear at the regional level.

Senator **Mathias**. You don't think that is a lack in the situation?

Mr. **Johnson**. Not at this time.

Senator **Mathias**. Are there any problems with emergency management plans which cannot be resolved with mutual aid agreements—that need something more?

Mr. **Anderson**. I guess our view, sir, is on how you define a mutual aid agreement. You could write a mutual aid agreement that could provide for all the contingencies that might arise in an assignment of roles. That could be a mechanism. Those agreements could be framed in such a way that if in fact such and such an incident occurred, everybody would know what was expected of them.

I almost broke in earlier. At the time of the Air Florida instance, one jurisdiction, in response to a request for help, sent 24 pieces of fire equipment to that scene. I would hope that the type of up-front planning we are talking about here would prevent that from happening.

Senator **Mathias**. Well, it demonstrated a cooperative intent. [Laughter.]

Mr. **Anderson**. Yes, sir, indeed it did.

Senator **Mathias**. There was a desire to want to help.

But I think that is right. That would be the heart of public planning.

We have talked about three widely different kinds of crises: the riots of 1968, the natural gas crisis of 1977, and the Air Florida and Metrorail twin disasters. Should there be some overall plan to deal with the region as a whole? Again, we are dealing with highly speculative numbers, and whether you would ever have a twin disaster again on the same day, within an hour, is a gamble whose probability would probably stretch out into the dozens of zeroes.

But one of those could happen in Prince Georges County and one could happen in Fairfax County which would tend to draw resources. As it happened, both of those were geographically fairly closely to each other, and they were. not causing a dispersal of resources, but should there be a regionwide plan that would take care of simultaneous disasters in different parts of the area?

Mr. ANDERSON. We are a little bit uncertain about the need for one grand master plan that would pull together all the plans of the individual jurisdictions. If they are properly coordinated so that if such and such an incident occurs in such and such a jurisdiction, this shall be the response of everybody that can bring assistance to bear, I am really not convinced that this master plan might contribute anything beyond that.

But again, you just described a situation where perhaps it could have made a difference. But I think we are a little uncertain and would hesitate to say that we need it.

Senator MATHIAS. If you have a disaster in one corner of the metropolitan area and all the resources—and a major disaster, one that calls for more than the neighborhood can provide—begin to move in that direction, and then, a couple of hours later, once your resources are all concentrated there, you get another problem at a different corner, I think somebody has got to decide who does what.

Mr. ANDERSON. A little earlier, we spoke of making sure we don't send everything we have to one of these incidents—a need, perhaps, for up-front planning so that only enough is sent. If you reach a saturation point on all the equipment in the area, you are in trouble in any event. But in the situation you described, we would not want to send every piece to that far corner, and that is where the up-front planning comes into play.

Senator MATHIAS. Do you have any comment on that?

Ms. DRAKE. Yes, I would like to comment on that.

I think that in terms of responding to two disasters in different parts of the region, the key is not necessarily a plan that addresses what happens if we have a building collapse in upper Montgomery County and a plane crash somewhere downriver in the Potomac, but rather the concept of operations.

By that I mean that if public safety officials in the region are prepared to respond with echelons of response—that is to say, level one is this response, and then, as the scene escalates, the response increases—both scenes could operate at once. But that also assumes that you do not have people responding without being asked to respond. That is just key.

Senator MATHIAS. Like Mr. Anderson's 24 pieces of fire equipment.

Ms. DRAKE. Right.

The other thing that might be pertinent there is question about Federal responsibilities. Maybe the point at which we have two things going on that are major in this region is the point at which we ought to talk about maybe there are additional accruing Federal responsibilities.

Senator MATHIAS. I have a number of other questions, but I do not want to hold up the next panel, and so I am going to hold the record open so that we can address some of the more urgent of the questions that we have not gotten to to you, and I would ask that you respond to them in writing so that they can be part of the record, if you would be kind enough to do that.

Thank you very much.

Mr. **Anderson**. Thank you, sir.

[The prepared statement and responses to written questions of Mr. Anderson, Mrs. Crone's prepared statement, and report of the Metropolitan Emergency Task Force follow:]

PREPARED STATEMENT OF WILLIAM J. ANDERSON

Mr. Chairman and Members of the Subcommittee, we welcome the opportunity to meet with you today to present the results of our work on emergency preparedness plans at several local jurisdictions.

Our objectives were to gather information on whether the selected jurisdictions had emergency preparedness plans; the extent of coordination involved in developing the plans; whether the plans were designed to deal with multiple disasters and inter-jurisdictional disasters; whether the jurisdictions' plans contained data on personnel, equipment, and supplies available for use during an emergency; and whether the jurisdictions believed that their equipment was adequate and up-to-date. We also obtained certain information you requested on the January 13, 1982, disasters.

Our work showed that all jurisdictions had a plan, that each plan had been recently or is currently being revised, but that there was little inter-jurisdictional coordination in plan development. The plans generally did not address multiple disasters or inter-jurisdictional disasters. Some plans contained data on personnel and equipment available for a disaster. Few contained information on emergency supplies. In most cases jurisdictions believed their personnel and equipment were adequate to deal with emergencies. Responses concerning the January 13, 1982, disasters varied by jurisdiction, depending on the degree of the jurisdiction's involvement.

As you know, we obtained information for Montgomery and Prince George's Counties in Maryland, the District of Columbia, and the Virginia jurisdictions of Arlington and Fairfax Counties and the Cities of Alexandria, Falls Church, and Fairfax. We discussed emergency preparedness with the Council of Governments (COG), Metro, U.S. Park Police, the Federal Emergency Management Administration, and the Federal Aviation Administration. As you also know, we did not verify the information provided by the eight local jurisdictions because of time constraints.

A summary of the information obtained from the local jurisdictions is presented in the schedules which are attached to my testimony.

I believe it is safe to say that the tragic events of January 13, 1982, raised the awareness of all metropolitan area jurisdictions of the need for coordinated emergency preparedness plans to deal with multiple or inter-jurisdictional disasters. Our work showed that the eight jurisdictions we visited were in the process of revising or had recently completed revision of their plans. In most cases, the jurisdictions said that the revision had nothing to do with the January 13 disasters, but our limited work showed that in several instances the current revision was the first such effort undertaken in many years. In this connection COG took a leadership role in dealing with emergency preparedness on a regional basis, and I understand that COG representatives will discuss the status of their efforts in their testimony today. I would also like to point out that COG has been significantly involved in emergency preparedness in the past and has sponsored several efforts which represent the major coordination mechanisms in place in the jurisdictions today.

One factor that seems constant in all jurisdictions is that the current level of staffing and equipment is not likely to increase significantly in the foreseeable future. This situation points up the need to effectively coordinate emergency preparedness activities to make the best use of personnel and equipment at hand. The question is how, since no one is charged with making this happen and coordination rests on the voluntary efforts of the jurisdictions. For the jurisdictions to adequately respond to the relatively infrequent major disasters without significant additional expenditures of their own funds will require the fullest cooperation, including the sharing of personnel and equipment, coordinated testing of plans, and critiques of tests to find out not only what works, but what works best. The COG effort in the area of developing mutual aid agreements, which are agreements between jurisdictions' response agencies (police and fire departments usually), and the jurisdictions' efforts to get these agreements executed and working have been a major first step. A sense of how much more needs to be done may be one end product of these hearings.

As pointed out earlier, all jurisdictions have a plan in place or in process. The amount of effort put into plan preparation varied significantly. For the smaller jurisdictions, planning seemed to be a function of budget availability and perhaps dependence on neighboring jurisdictions' assistance in the event of a disaster. Similarly, the extent of Federal assistance utilized in planning varied significantly, with the jurisdictions which utilized no Federal aid generally on the lower end of the scale in plan development.

One characteristic that came through clearly is that each jurisdiction's plan is intended to deal first and foremost with problems within its jurisdiction. Mutual aid agreements are the basic coordinating mechanism between jurisdictions. These agreements are uniform throughout the area and represent one of the areas in which COG has been very active. The agreements are looked upon by jurisdictions as a means whereby additional resources can be brought into the jurisdiction in the event of a disaster. In most instances, other than the mutual aid pacts, there has been no significant coordination between jurisdictions in the development or revision of emergency preparedness plans.

Our work disclosed that jurisdictions have significantly different views of what a plan is and whether individual response agency (e.g., fire department, police) plans are part of an overall plan or are completely separate. Similarly, we found differences in the relationships between the emergency preparedness activity and the response agencies. Some emergency preparedness agencies or activities seemed to work closely with the response agencies, but in other cases there seemed to be little interaction. In some cases, we had difficulty in ascertaining from the plan how the emergency preparedness activity and the response agencies would work together in the event of a disaster. In one plan there seemed to be a complete separation between the emergency preparedness activity and the response agency. The emergency preparedness plan contained little information on how the plan would be used to control response agency resources in the event the plan was activated. In another jurisdiction, emergency preparedness personnel knew little about the operations of the major response agencies, and that jurisdiction's plan, which is currently being revised, contained little information to show how the plan would be used to control response agencies' resources in the event the plan was activated.

I mentioned earlier that since the January 13, 1982, disasters many jurisdictions had completed or were revising their plans. We were advised that a communication problem experienced on that fateful day between the District and Arlington County has been resolved. Some problems which came to light during the Metro derailment have been addressed, solutions have been tested, and the problems corrected according to Metro officials. The improvements can best be described by Metro officials, but they involve improved communications from the tunnels, a third rail warning device, and an evacuation cart. Also, since January 13, 1982, COG, through its Public Safety Committee and the various subcommittees, has issued a

72-recommendation report and adopted an action plan to implement these recommendations, all of which point toward improved emergency response capability in the Washington metropolitan region. National Airport has obtained a 20-foot rescue boat, a 40-foot icebreaker, an additional airboat (ordered prior to January 13, 1982), and two "Billy Pugh" nets, one of which was given to the U.S. Park Police. Direct communication lines have also been established by the Airport with the District and Arlington County.

The question remains, where are we now? The matrix attached to my testimony summarizes the jurisdictions' responses to the questions we posed. Perhaps the major issue is what form should an emergency preparedness plan for this unique area take? Should each jurisdiction continue to strive to develop its own plan, designed primarily to protect its own jurisdiction, or should there be some overall plan to deal with the region as a whole? This is an obvious question that should be addressed in setting the framework for emergency preparedness planning.

A complicating factor is that there is little agreement among the jurisdictions as to whether planning standards exist or not, and, if so, what the standards are for plan preparation, communications, equipment, staffing, training, and testing. We received answers ranging from "no standards" to "FEMA standards", with intermediate answers such as "State standards" and "guidelines only". If consistent plans are a desired goal, it seems that agreement on a uniform set of standards is a necessary first step.

The extent to which jurisdictions were making any preparations to deal with multiple disasters or inter-jurisdictional disasters is another issue. At the outset of our work we looked into this matter. In only one case did we find any indication of a plan to deal with multiple disasters and that particular plan was in draft form and thus not available for our review. We saw no preparations for inter-jurisdictional interaction, and, for that matter, we saw little coordination between jurisdictions in plan development. Individual agencies have mutual aid agreements with other jurisdictions--primarily for fire and police assistance--and these agreements are the basic coordination and cooperation mechanisms available throughout the jurisdictions we visited. Most jurisdictions point to these agreements as the means available to deal with multiple and inter-jurisdictional disasters.

Another issue that needs to be resolved relates to tests and drills. Not all jurisdictions ran tests or drills to see how well their plans worked. Some jurisdictions that ran tests did not document the results so there was no means to monitor the status of any needed corrective action. It should be noted that one jurisdiction did test extensively, documented test results, and took actions to correct the problems noted.

Availability of equipment and supplies is also an issue that needs to be addressed. Some plans contained no information on available equipment in the jurisdiction other than equipment relative to the emergency preparedness office itself. A few plans contained listings of all jurisdiction-owned equipment as well as some privately-owned equipment. One jurisdiction's plan did not include a listing of equipment, but emergency preparedness personnel had access to a computer listing of all of the jurisdiction's equipment. And most jurisdictions we visited did not keep emergency supplies on hand specifically earmarked for use in plan-controlled responses to emergencies. Jurisdictions cited a wide range of sources for obtaining such supplies.

Finally, communication among the jurisdictions was cited as a continuing problem, with the smaller jurisdictions seemingly in poorer shape than the larger ones in this regard. The basic problem seems to involve inter-jurisdictional communication between response agency mobile units.

A complaint made by some Virginia jurisdictions dealt with trying to get Federal assistance--personnel and equipment--during a disaster. One jurisdiction advised that on February 11, 1983, they tried to obtain two ambulances from a military installation. They said it took 9 phone calls and approximately 4 to 6 hours before they could contact the appropriate person at the base. The problem may be peculiar to Virginia where the jurisdiction must first contact a State official and get clearance to contact the Federal entity. In Maryland we understand that the jurisdictions need only call the State and the State takes care of contacting the appropriate Federal entity. Some jurisdictions expressed the opinion that it would be more expedient to have one Federal contact, perhaps within FEMA, who could act as liaison between the jurisdictions and all Federal agencies. A similiar suggestion was made with respect to the various Federal agencies which set up command posts at the site of the Air Florida crash. One Virginia jurisdiction in attendance said that, rather than having several Federal command posts and several Federal spokesmen, a single command post and one Federal spokesman would have alleviated some of the confusion that day.

Mr. Chairman, that concludes my testimony. We would be happy to answer any questions you might have.

AREA JURISDICTIONS RESPONSES TO QUESTIONS ON EMERGENCY PREPAREDNESS

Questions	Maryland			Virginia				
PLAN FORMULATION/TESTING	Mont. Co.	PG. Co.	D.C.	Alex.	Arl. Co.	Frfx. Cty.	Frfx. Co.	Fls. Ch.
Does a plan exist?	Yes	Yes	Yes	Yes	Yes	Yes	Yes, in draft	Yes, in draft
Date of plan.	1977	2/15/78	1982 (with printer)	1/12/83	5/3/56	7/81	Initially 1969; being revised	In draft
How often updated?	Irregularly	Irregularly (last 2/15/78)	At least annually	Continually	Irregularly	Basic--6 months; Annexes--as needed	Will be annual	In draft
Plan based on standards? Which standards?	Yes; FEMA	Yes; DOD publication	Yes; FEMA/ 1974 District Act	Yes; State plan	Yes; State	No; State plan format	Yes; State	Arlington Co. Plan
Single overall plan? Agency plans?	Yes Yes	Yes Yes, annexes	Yes Yes	Yes Yes	Yes; Fire Dept.	Yes No	Yes Yes	Yes No
Who maintains plan?	Fire/Rescue Services	OEP--Basic & annexes	OEP--Basic	Emergency Preparedness Coordinator	Fire Chief	Police Dept.	Deputy Coordinator of Emergency Services	Fire Marshal
How is plan activated?	County Administrative Officer	County Executive	Mayor	City Manager	County Manager	City Manager	County Executive	City Manager
Does plan deal with multiple disasters?	No	No	No	No	No	No	Yes	No

AREA JURISDICTIONS RESPONSES TO QUESTIONS ON EMERGENCY PREPAREDNESS

Questions	Maryland			Virginia				
PLAN FORMULATION/TESTING	Mont. Co.	PG. Co.	D.C.	Alex.	Arl. Co.	Frfx. Cty.	Frfx. Co.	Fls. Ch.
Does plan identify Metro Rail as a potential hazard?	No	No	No	No	No	No	No	No
Does plan deal specifically with Metro Rail accidents?	No	No	No, Fire Dept. does	No	No, Fire Dept. does	No	No	No
Have any exercises/tests simulating a Metro Rail accident been run?	No	No	Yes	Yes	Yes	No	Yes; as participant	No
Does your jurisdiction have a high risk area/activity?	Yes	Yes	No	Yes	Yes	Yes	Yes	No
Does plan cover this area/activity?	Yes	Yes	No	Yes	Yes	Yes	Yes	No
Has plan been completely tested?	No	No	No	No	No	No	No, being revised	No
Partially tested?	Yes	Yes	Yes	Yes	Yes	No	*	Not recently
Did other jurisdictions participate?	No	No	Yes	Yes	No	--	*	N/A
Date of last test.	1/83	10/81	11/82	Spring '82	11/82	--	*	N/A

AREA JURISDICTIONS RESPONSES TO QUESTIONS ON EMERGENCY PREPAREDNESS

Questions	Maryland			Virginia				
PLAN FORMULATION/TESTING	Mont. Co.	PG Co.	D.C.	Alex.	Arl. Co.	Frfx. Cty.	Frfx. Co.	Fls. Ch.
Test results available?	Yes, but not provided	From participating departments	Some	Yes	No	--	No	N/A
Does plan identify incident commander?	Highest ranking officer present from responsible office	Not specifically	Not specifically	Yes	Yes	Yes	Yes	Yes
Has plan been revised since 1/13/82?	Being revised	Being revised	Overall--no; FD--yes	Yes	Yes	Yes	Being revised	Being revised

AREA JURISDICTIONS RESPONSES TO QUESTIONS ON EMERGENCY PREPAREDNESS

Questions	Maryland			Virginia				
COORDINATION	Mont. Co.	PG Co.	D.C.	Alex.	Arl. Co.	Frfx. Cty.	Frfx. Co.	Fls. Ch.
Was development of the plan coordinated with;								
- agencies within jurisdiction;	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes (being done)
- other jurisdictions;	Yes	Yes	No	No	No	Yes, Fairfax County	No	Doesn't know
- hospitals;	Yes	Yes	No	Yes	Yes	Yes, Common-wealth	Yes	No
- private organizations	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
- state government;	Yes	Yes	N/A	No	Yes	No	No	Will send plan
- Federal government?	Yes	Yes	Yes	No	Doesn't know	No	No	No, goes through State
Did other jurisdictions coordinate their plan development with you?	No	Some	No	No	No	No	Unknown	No

AREA JURISDICTIONS RESPONSES TO QUESTIONS ON EMERGENCY PREPAREDNESS

Questions	Maryland			Virginia				
COORDINATION	Mont. Co.	PG Co.	D.C.	Alex.	Arl. Co.	Frfx. Cty.	Frfx. Co.	Fls. Ch.
Does plan spell out coordination process for:								
- disasters in other jurisdiction?	No	No	No	No	No	No	Yes	No
- multiple jurisdiction disasters?	No	No	No	No	No	No	Yes	No
Do you believe coordination was adequate?								
- development of plan?	Yes	No	No, needs more regional involvement	Yes	No	Yes	Yes	Yes
- during a disaster?	Yes	No	Yes	Yes	Yes, but needs improvement	Yes	Yes	Yes

AREA JURISDICTIONS RESPONSES TO QUESTIONS ON EMERGENCY PREPAREDNESS

Questions	Maryland			Virginia				
EQUIPMENT	Mont. Co.	PG Co.	D.C.	Alex.	Arl. Co.	Frfx. Cty.	Frfx. Co.	Fls. Ch.
Does plan provide for a single, centralized equipment list?	No	No	No	Yes	No	No	Will	No
Does your plan include such a list?	Yes	Partial list available	No	Yes	No	No	Will	No
Is such listing available anywhere in your jurisdiction?	Yes	Yes, computer	No	Yes	No	No	Will be	No
Do individual agencies have listing of their equipment?	Yes	Yes	Yes	Some do	Yes	Yes	Yes	Yes
Do you know what equipment is available from other jurisdictions?	Yes	OEP--no	No	Yes, for No. Va.	Yes	No, only State Police	Will	Yes
Are there formal agreements to use other jurisdictions' equipment?	Yes	Mutual Aid Agreements, Md. State Plan	Mutual Aid Agreements	Mutual Aid Agreements	Yes, Public Works, Police/Fire Agreement	Yes	Mutual Aid Agreements, COG	Mutual Aid Agreements
Is equipment:		For OEP:						
- reliable;	Yes	Communications-yes RADEF kits-no	Yes	Yes	Yes	Yes	Yes	Yes

AREA JURISDICTIONS RESPONSES TO QUESTIONS ON EMERGENCY PREPAREDNESS

Questions	Maryland			Virginia				
EQUIPMENT	Mont. Co.	PG Co.	D.C.	Alex.	Arl. Co.	Frfx. Cty.	Frfx. Co.	Pls. Ch.
- of high quality;	Yes	No, except at EOC	Yes	Yes	Yes	Adequate	Yes	Yes
- adequate?	Yes	No	Yes, except for ice rescues	Yes	Yes	Yes	Yes	Yes
Is privately owned equipment listed?	Yes	Only earth-moving equipment	No	Yes	Only in Fire Plan	Only firms with earth-moving equipment	Will be	No
Is availability known?	No	Yes	No	Yes	Yes	Yes	Will be	No
Is availability of Federal equipment known?	Yes	Yes	No	Yes	Yes	Some	Will be	Through State
Are special arrangements in effect to obtain?	Some	Yes	N/A	Yes	In new plan	Yes	Will be	Through State

AREA JURISDICTIONS RESPONSES TO QUESTIONS ON EMERGENCY PREPAREDNESS

Questions	Maryland			Virginia				
COMMUNICATIONS	Mont. Co.	PG Co.	D.C.	Alex.	Arl. Co.	Frfx. Cty.	Frfx. Co.	Fls. Ch.
Is system up-to-date?	Yes	OEP--no; Departments--yes	No	Yes	Yes	No	Yes	No
Compatible with other jurisdictions?	Mostly	Yes, GP 2200 only	No	Yes	Yes	No	Yes	No
Jurisdictions not compatible.	P.G. County	N/A	All	N/A	None	All Metropolitan jurisdictions	N/A	All
System changed since January 13, 1982?	No	No	Yes, 700 new radios (port.)	No	No	Yes (added radio)	No	No (new radio purchase planned)
Procedures changed since January 13, 1982?	No	No	No	No	Yes	Yes	No	No
Systems tested with other jurisdictions?	No	Yes, GP 2200	PMARS	Yes	Yes	No	Yes	PMARS only
Problems with other jurisdictions.	N/A	No	Yes, unclear signals	No	No	Not compatible	No	N/A
Do you use volunteer organizations for communications (REACT-RACES)?	Yes	No	CAP/REACT/NEAR	Yes	Yes	Not presently, plan to use REACT	Yes	Yes
Are these organizations included in any tests in your jurisdiction?	No	N/A	No	Yes	No; no equipment to communicate	Not presently	Will be under revised plan	No

AREA JURISDICTIONS RESPONSES TO QUESTIONS ON EMERGENCY PREPAREDNESS

Questions	Maryland			Virginia				
COMMUNICATIONS	Mont. Co.	PG Co.	D.C.	Alex.	Arl. Co.	Frfx. Cty.	Frfx. Co.	Fls. Ch.
Persistent communication problem?	Yes	Yes	Yes	No	Yes	Not for everyday use, is for communication outside jurisdiction	No	Yes
Nature of problem	Frequencies overloaded	Other jurisdictions' OEPs not operational around the clock	Can't communicate with police/fire by radio	No	Patching	Old equipment	No	Car radios not linked to other jurisdictions

AREA JURISDICTIONS RESPONSES TO QUESTIONS ON EMERGENCY PREPAREDNESS

Questions	Maryland			Virginia				
PERSONNEL	Mont. Co.	PG Co.	D.C.	Alex.	Arl. Co.	Frfx. Cty.	Frfx. Co.	Fls. Ch.
How many people are specifically assigned to emergency preparedness?	2.5	OEP: 4 F/T; 4 P/T	OEP-5	1	2 P/T	1 P/T 1 radio consultant	2	2 P/T
Does plan identify staff available during emergency?	Yes	Partially	Seldom	Yes	Yes	Yes	Yes	Yes
Does your plan/practice provide for emergency training?	Yes	Each department does own training	Yes	Yes	Yes	Yes	Yes	Yes
Is such training done in-house?	Yes	For OEP--yes	Yes	Yes	Yes	Some	Yes	Fire--no Police--yes
Where is external training obtained?	State, FEMA Civil Defense, National Fire Academy	State of Md., FEMA Training Center, NRC	FEMA, FBI Academy	National Fire Academy, NETC, Emergency Mgmt. Inst.	National Fire Academy, University of Maryland	Fairfax Co. Fire Center, No. VA. Training Center, NETC	National Fire Academy, NETC	Arlington Co., Fairfax Co., NOVA Police Academy
Are sufficient numbers of trained people available?	Yes	Don't know about each dept.	Yes	Yes	Yes	Yes	Yes	Yes
Are reserve personnel resources known?	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

AREA JURISDICTIONS RESPONSES TO QUESTIONS ON EMERGENCY PREPAREDNESS

Questions	Maryland			Virginia				
PERSONNEL	Mont. Co.	PG Co.	D.C.	Alex.	Arl. Co.	Frfx. Cty.	Frfx. Co.	Fls. Ch.
What is available from:								
- State;	Indeterminate	State police, National Guard, other State departments	N/A	State police	State police	Nat'l Guard, State police	State police, etc.	State police
- other jurisdictions;	Indeterminate	Fire, Police, OEP	Fire/ Police	Fire/ Police	Fire/ Police	Police, Fairfax Co. Health Dept.	Fire/Police	Fire/ Police
- non-government;	Indeterminate	Red Cross, Salvation Army	Red Cross, CAP, REACT, NEAR	Red Cross, RACES, Salvation Army	Volunteers, Red Cross	Red Cross, other volunteer groups	Red Cross	Red Cross
- Federal?	Indeterminate	U.S. Park Police, Andrews AFB, Patuxent Naval Air Station	FEMA-Coordinated	None specifically	None	Unknown	None specifically	No

AREA JURISDICTIONS RESPONSES TO QUESTIONS ON EMERGENCY PREPAREDNESS

Questions TRANSPORTATON OF VICTIMS	Maryland					Virginia		
	Mont. Co.	PG Co.	D.C.	Alex.	Arl. Co.	Frfx. Cty.	Frfx. Co.	Pls. Ch.
Does plan identify available modes of transporting victims:								
- from jurisdiction;	Yes	Yes	Yes	Yes	No	Cue buses	Yes	No
- private sources;	Yes	Yes	NDTA	Yes	No	Red Cross	Yes	No
- other jurisdictions;	No	No	No	Yes	No	Fairfax Co. buses	Yes	No
- State;	Yes	Yes	N/A	Yes	No	Not addressed	Yes	No
- Federal?	No	Yes	No	Yes	No	Not addressed	Yes	No
Does plan provide for transporting to site:								
- emergency vehicles;	No	No, in SOPs	Yes	Yes	No	No, in SOPs	Yes	No
- equipment;	No	No, in SOPs	Yes	Yes	No	No, in SOPs	Yes	No
- supplies;	No	No, in SOPs	Yes	Yes	No	No, in SOPs	Yes	No
- personnel?	No	No, in SOPs	Yes	Yes	No	No, in SOPs	Yes	No
Does it provide for transporting victims:								
- to hospitals;	Yes	Yes	Yes	Yes	No	No, in SOPs	Yes	No
- to other locations for less intense aid?	Yes	Yes	Yes	Yes	No	No, in SOPs	Yes	No

AREA JURISDICTIONS RESPONSES TO QUESTIONS ON EMERGENCY PREPAREDNESS

Questions TRANSPORTATION OF VICTIMS	Maryland			Virginia				
	Mont. Co.	PG Co.	D.C.	Alex.	Arl. Co.	Frfx. Cty.	Frfx. Co.	Fls. Ch.
Does plan provide for clearing route:								
- to the disaster site;	No	No, in SOPs	No	Yes	Yes	No, in SOPs	Yes	Yes
- from the site to hospital or other location for medical attention?	No	No, in SOPs	Yes	Yes	Yes	No, in SOPs	Yes	Yes

AREA JURISDICTIONS RESPONSES TO QUESTIONS ON EMERGENCY PREPAREDNESS

Questions	Maryland			Virginia				
PUBLIC RELATIONS	Mont. Co.	PG Co.	D.C.	Alex.	Arl. Co.	Frfx. Cty.	Frfx. Co.	Fls. Ch.
Covered in plan?	Yes	Yes	Yes	Yes	In new plan	Yes	Yes	Yes
Does jurisdiction use single spokesman?	Yes	Yes	Yes	Yes	In new plan	Yes	Yes	Yes
Was media involved in developing plan?	No	No	No	No	No	No	No	Will do
Are media restrictions in plan?	No	Yes	No	Yes	No	No	Yes	No
How is media informed of restrictions?	Through Information Office	At scene	Pub. Info. Off.	Not specified	Time of Incident	Told at time of disaster	Not specified	Time of incident
Does media cooperate during disaster?	Usually	Yes	Usually	Yes/No	Depends	Have in past	Yes	Sometimes

AREA JURISDICTIONS RESPONSES TO QUESTIONS ON EMERGENCY PREPAREDNESS

Questions JANUARY 13, 1982 DISASTERS	Maryland			Virginia				
	Mont. Co.	PG Co.	D.C.	Alex.	Arl. Co.	Frfx. Cty.	Frfx. Co.	Fls. Ch.
How did you learn of disasters?	GP 2200	OEP Director heard from one of his departments	GP 2200 FD Radio Metro	GP 2200	REACT	GP 2200	GP 2200	Radio
Did your jurisdiction respond?	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
What was your role?	Extricated (Victim at Metro)	Standby	Incident Commander	Assist	Initial incident commander	N/A	Assist	Support
When did you get there?	5:30	OEP doesn't know	Approx. 4:07	Ambulance dispatched at 4:16	11 minutes after crash	N/A	Approximately 5:05	Shortly after crash
Did your jurisdiction provide:								
- equipment;	Yes	Yes	Yes	Yes	Yes	N/A	Yes	Yes
- personnel;	Yes	Yes	Yes	Yes	Yes	N/A	Yes	Yes
- supplies?	No	Yes	Yes	No	Yes	N/A	Yes	No
When did you leave site?	6:30	OEP doesn't know	1/27/82	Ambulance returned to duty at 6:05	After 2 hours	N/A	Not available	Around 5:00

AREA JURISDICTIONS RESPONSES TO QUESTIONS ON EMERGENCY PREPAREDNESS

Questions JANUARY 13, 1982 DISASTERS	Maryland			Virginia				
	Mont. Co.	PG Co.	D.C.	Alex.	Arl. Co.	Frfx. Cty.	Frfx. Co.	Fls. Ch.
Did problems exist in:								
- Incident Commander role;	Yes	OEP doesn't know	No	No	Yes	N/A	Yes	No response
- getting to site;	Yes	OEP doesn't know	Yes	No	Yes	N/A	Yes	No response
- evacuating victims;	No	OEP doesn't know	Yes	Not involved	Yes	N/A	Not involved	No response
- adequacy of equipment	No	OEP doesn't know	Yes	No	No	N/A	No	No response
- adequacy of communications;	Yes	Yes	Yes	Yes	Yes	N/A	Yes	No response
- adequacy of personnel?	No	OEP doesn't know	No	No	No	N/A	No	No response
Was your plan revised as a result of 1/13/82 disasters?	Yes	No	Overall-no; FD-yes	Yes	Yes	No	Being revised	No response
Has revised plan been tested?	Yes	N/A	FD-yes	Yes	No, plan revision not complete	N/A	No	No response

PREPARED STATEMENT OF RUTH R. CRONE

MR. CHAIRMAN, COMMITTEE MEMBERS, LADIES AND GENTLEMEN:

THANK YOU FOR THE OPPORTUNITY TO APPEAR BEFORE YOU AND DISCUSS THE ACTIVITIES OF THE METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS IN CONNECTION WITH EMERGENCY PREPAREDNESS. COG, AS YOU KNOW, IS A VOLUNTARY ASSOCIATION OF THE LOCAL GOVERNMENTS IN THE METROPOLITAN WASHINGTON AREA. EMPLOYING A CONSENSUS-SEEKING APPROACH, THE COG FORUM PROVIDES AN ARENA FOR THE IDENTIFICATION, DEBATE AND RECONCILIATION OF PROBLEMS, WHICH CROSS-CUT JURISDICTIONAL BOUNDARIES AND REQUIRE RECIPROCITY OF POLICY AND ACTION BY LOCAL GOVERNMENTS.

THE SOLUTIONS TO AREA-WIDE, INTER-JURISDICTIONAL PROBLEMS ARE SELDOM, IF EVER SIMPLE:

* THEY MUST COMPLY WITH EXISTING RELAVANT LAWS AND ORIDANCES.

* THEY MUST NOT RESULT IN DISPROPORTIONATE ADVERSE IMPACT ON ANY ONE OR SEVERAL LOCAL JURISDICTIONS.

* THEY MUST, AT THE SAME TIME, PROVIDE SUBSTANTIAL REMEDY TO THE PROBLEM.

IN THE AREA OF PUBLIC SAFETY, THE PROBLEMS ASSOCIATED WITH EMERGENCY PREPAREDNESS HAVE AN ADDITIONAL DIMENSION, WHICH STEMS FROM THE REACTIVE OR RESPONSE NATURE OF THE SERVICES. EMERGENCY RESPONSE AGENCIES SUCH AS POLICE AND FIRE, ARE THE MOST HIGHLY VISIBLE OF ALL LOCAL GOVERNMENT AGENCIES. THEY DEAL WITH EMERGENCIES ON A DAY-TO-DAY BASIS. AS A MATTER OF REGIONAL CONCERN, THE EMERGENCY PREPAREDNESS ACTIVITIES AT COG FOCUS ON THE DEVELOPMENT OF:

1). A FRAMEWORK FOR INTERGOVERNMENTAL RESPONSE
2). GUIDELINES FOR INTERJURISDICTIONAL ACTION DURING INCIDENTS WHICH PRESENT A SIGNIFICANT THREAT TO, OR DISRUPTION OF THE PUBLIC SAFETY.

PLANS AND AGREEMENTS WHICH ARE DEVELOPED UNDER THE AUSPICES OF COG MUST MEET THE CRITERIA PREVIOUSLY MENTIONED, AND MUST ALSO IN THE CASE OF PUBLIC SAFETY, AND EMERGENCY RESPONSE AGENCIES, BE SUFFICIENTLY FLEXIBLE TO APPLY TO LOCAL OPERATIONS AS WELL AS TO MULTI-AGENCY AND MULTI-JURISDICTIONAL RESPONSE.

ACTIVITIES TO STRENGTHEN AND IMPROVE METROPOLITAN EMERGENCY MANAGEMENT HAVE BEEN UNDERWAY THROUGH COG SINCE FEBRUARY OF LAST YEAR. DURING THE NEXT FEW MINUTES, I WANT TO ADDRESS THE FINDINGS AND RECOMMENDATIONS OF THE METROPOLITAN EMERGENCY RESPONSE TASK FORCE, AND THE AGREED-UPON ACTION PLAN FOR AFFECTING THE CHANGES CALLED FOR BY THE TASK FORCE; I WANT TO CHARACTERIZE THE RESPONSE OF LOCAL OFFICIALS IN SEEKING TO IMPROVE THE RESPONSE EMERGENCY RESPONSE CAPABILITIES; AND FINALLY I WANT TO BRING YOU UP-TO-DATE AS TO THE STATUS OF THE IMPLEMENTATION EFFORT AND PROVIDE THE SUBCOMMITTEE WITH A SENSE OF THE RELATIVE DIFFICULTY AND COST OF THE VARIOUS IMPLEMENTATION ACTIONS.

FIRST, LET'S GO OVER THE FINDINGS AND RECOMMENDATIONS:

IN FEBRUARY 1982, THE COG BOARD APPOINTED THE METROPOLITAN EMERGENCY RESPONSE TASK FORCE, AND IDENTIFIED ITS MISSION: TO EXAMINE THE EMERGENCY RESPONSE ACTIONS AND ACTIVITIES ASSOCIATED WITH THE EMERGENCY CONDITIONS OF JANUARY 13, 1982 AND DEVELOP RECOMMENDATIONS TO STRENGTHEN THE REGION"S EMERGENCY RESPONSE CAPABILITY. THIS EXAMINATION INVOLVED SUBCOMMITTEES AND COMMITTEES OF THE COUNCIL OF GOVERNMENTS. IN ADDITION, SEVERAL SPECIAL-PURPOSE TASK GROUPS WERE ESTABLISHED ON AN AD HOC BASIS TO INSURE MAXIMUM INVOLVEMENT AND SUBSTANTIVE INPUT. THE REPORT OF ANOTHER TASK FORCE, LED BY D.C. POLICE CHIEF MAURICE T. TURNER WAS A KEY SOURCE OF INFORMATION IN THE PREPARATION OF THE COG TASK FORCE RECOMMENDATIONS.

I WOULD LIKE TO QUOTE VERY BRIEFLY FROM THE STATEMENT OF CHIEF SELBY C. JACOBS, THE CHAIRMAN OF THE METROPOLITAN EMERGENCY RESPONSE TASK FORCE, WHEN HE PRESENTED THE TASK FORCE RECOMMENDATIONS TO THE COG BOARD ON JUNE 9, 1982. CHIEF JACOBS STATED, AND I QUOTE:

> "I SHOULD NOTE THAT THROUGHOUT THE PREPARATION OF THIS REPORT, THE TASK FORCE FOCUSED ON SEVERAL BASIC PRINCIPLES. FIRST, THROUGH THE DEVELOPMENT OF OBJECTIVES FOR THE REGION, WE WORKED TO MOVE

TO MOVE BEYOND THE PROBLEMS OF THE 13TH, AND DEVELOP A DIRECTION FOR THE REGION.

SECOND, WE NEVER LOST SIGHT OF THE FACT THAT ONCE OUR REPORT WAS DONE, THE SECOND PHASE WOULD BE IMPLEMENTATION OF OUR RECOMMENDATIONS. SINCE ALL OF US ON THE TASK FORCE COULD BE CALLED UPON TO RESPOND TO A DISASTER SITUATION, WE NECESSARLY KEPT OUR RECOMMENDATIONS REALISTIC AND "DOABLE".

THIRD, WE WORKED AS A TEAM TO ADDRESS NOT ONLY THE MULTIJURISDICTIONAL ASPECTS OF THE RESPONSE, BUT THE MULTI-SERVICE OR MULTI-DISCIPLINARY ASPECTS OF THE RESPONSE."

WITH THESE GUIDING PRINCIPLES, THE METROPOLITAN EMERGENCY RESPONSE TASK FORCE DEVELOPED A REPORT WHICH CONTAINED A TOTAL OF 72 RECOMMENDATIONS WHICH ARE DIVIDED INTO TWO BROAD CATAGORIES, PLANNING AND ORGANIZATION, AND EMERGENCY RESPONSE.

THE RECOMMENDATIONS WHICH ARE CONCERNED WITH PLANNING AND ORGANIZATIONAL CONSIDERATIONS ADDRESS METROPOLITAN PLANNING; TRAINING AND MANPOWER DEVELOPMENT; AND MUTUAL AID AGREEMENTS.

THE EMERGENCY RESPONSE RECOMMENDATIONS REVOLVE AROUND EIGHT BASIC AREAS OR COMPONENTS OF EMERGENCY RESPONSE. THESE COMPONENTS ARE:

NUMBER 1: NOTIFICATION AND ALERT;
NUMBER 2: THE GENERAL NATURE OF RESPONSE TO DISASTER,
NUMBER 3: MOBILIZATION OF RESOURCES;
NUMBER 4: PRE-HOSPITAL EMERGENCY MEDICAL SERVICE RESPONSE;
NUMBER 5: INCIDENT COMMAND AND CONTROL;
NUMBER 6: AIR RESPONSE COMMAND AND CONTROL;
NUMBER 7: COMMUNICATION; AND
NUMBER 8: REGIONAL HOSPITAL RESPONSE.

THE REPORT OF THE METROPOLITIAN EMERGENCY RESPONSE TASK FORCE SET

OBJECTIVES FOR THE REGION IN EACH OF THE AREAS WHICH I HAVE JUST MENTIONED. THE TASK FORCE, AT THE SAME TIME, SYSTEMATICALLY WORKED TO IDENTIFY THE UNDERLYING ASSUMPTIONS RELATED TO EACH COMPONENT. THE IDENTIFICATION OF UNDERLYING ASSUMPTIONS WAS A MAJOR STEP IN THE DEVELOPMENT OF A UNIFIED SET OF RECOMMENDATIONS.

THE RESULTS WERE TERMED TO BE A "BLUE PRINT FOR THE REGION".

> THIS "BLUE PRINT" CHARACTERIZED EMERGENCY RESPONSE AS A METROPOLITAN-LEVEL PHENOMENON.
>
> IT STATED, WITH SOME CLARITY, WHAT OUGHT TO EXIST AND WHAT OUGHT TO HAPPEN IN INSTANCES EVOLKING OR REQUIRING A REGIONAL RESPONSE.

THE NEXT STEP WAS TO DEVELOP AN ACTION PLAN WHICH WOULD BE APPROVED BY ALL PARTICIPANTS, DIVIDING UP THE WORK AND MAPPING OUT TIME FRAMES IN WHICH THE CHANGES WHICH WERE REQUIRED, AND THE RESEARCH AND DEVELOPMENTAL WORK NECESSARY WOULD BE DONE.

THIS ACTION PLAN WAS DEVELOPED BETWEEN SEPTEMBER AND DECEMBER 1982, AND WAS PRESENTED TO THE COG BOARD OF DIRECTORS IN JANUARY OF THIS YEAR. WITHIN THE ACTION PLAN THE 72 RECOMMENDATIONS IN THE TASK FORCE REPORT ARE CORRELATED AS THE BASIS FOR 42 ACTIONS WHICH MUST BE TAKEN IN ORDER TO ACHIEVE THE RECOMMENDATIONS. EACH ACTION HAS A DETAILED SET OF TASKS WHICH HAVE BEEN ASSIGNED TO THE APPROPRIATE COMMITTEE OR SUBCOMMITTEE WITHIN COG, THE APPROPRIATE AGENCY OR ORGANIZATION OUTSIDE COG; OR A COMBINATION OF BOTH. THUS, THE ACTION PLAN SEEKS TO INVOLVE ALL RELEVANT AGENCIES AND ORGANIZATIONS TO SUPPORT THE INHANCEMENT AND IMPROVEMENT OF EMERGENCY RESPONSE IN THIS REGION.

THIS ACTION PLAN IS THE METHODOLOGY FOR ACCOMPLISHING THE IMPLEMENTATION OF THE 72 RECOMMENDATIONS OF THE COG BOARD'S TASK FORCE ON EMERGENCY RESPONSE.

BEFORE I GO ANY FURTHER I WANT TO EMPHASIZE THE PROACTIVE NATURE

OF THE REGIONAL EFFORT AT THIS POINT AREA ELECTED AND APPOINTED OFFICIALS, NOTABLE THOSE CHARGED WITH PROTECTING THE PUBLIC SAFETY, HAVE CHOSEN TO ACT COLLECTIVELY IN THE ANTICIPATION THAT FUTURE INCIDENTS MAY AND PROBABLY WILL, CALL FOR AN ARREAWIDE RESPONSE. AT THE SAME TIME OTHER EFFORTS HAVE BEEN MADE WHICH ARE LARGELY REMEDIAL MEANING THAT THEY WERE MADE IN ORDER TO SOLVE A SPECIFIC PROBLEM RELATED TO THE EVENTS OF JANUARY 13TH, AND THEREBY TO REDUCE THE POSSIBLE OF REOCCURANCE OF THOSE PROBLEMS.

THE PROACTIVE NATURE OF THE REGIONAL EFFORT IS REFLECTED IN ITS ULTIMATE GOAL, WHICH IS THE DEVELOPMENT OF A REGIONAL EMERGENCY RESPONSE MANAGEMENT PLAN BY THE END OF 1983. THIS PLAN WILL ENCOMPASS STANDARD TERMINOLOGY FOR EQUIPMENT AND PERSONNEL, STANDARD PROCEDURES FOR IDENTIFICATION OF COMMAND PERSONNEL, AGREED UPON NOTIFICATION PROCEDURES AND COMMUNICATION PROCEDURES TO MENTION SOME OF ITS COMPONENTS.

POSITIVE REMEDIAL MEASURES WHICH HAVE BEEN TAKEN INCLUDE:

* EXTENSION OF THE WASHINGTON NATIONAL AIRPORT EMERGENCY OPERATIONS SECONDARY RESPONSE AREA NORTH TO THE MEMORIAL BRIDGE, EAST TO INCLUDE THE POTOMAC RIVER AND SOUTH TO THE WILSON BRIDGE;
* DEVELOPMENT OF A NOTIFICATION PROCEDURE FOR USE AFTER THE DECISION HAS BEEN MADE TO RELEASE GOVERNMENTAL EMPLOYEES IN RESPONSE TO SEVERE WEATHER CONDITIONS IN THE METROPOLITAN WASHINGTON AREA;
* EXECUTION OF A COMMAND AND CONTROL EXERCISE FOR A POTOMAC RIVER INCIDENT;
* EXECUTION OF A MID-RIVER METRO TUNNEL DISASTER DRILL FOR RESPONSE TO INCIDENTS IN THE METRO SUBWAY SYSTEM;
* DEVELOPMENT OF A MASS CASULITY DISASTER PLAN BY THE DISTRICT OF

COLUMBIA;

- INITIATION OF DISASTER RESPONSE MANAGEMENT TEAMS DISASTER PLAN REVISIONS IN AREA LOCAL JURISDICTIONS; AND
- AUTHORIZATION FOR THE FIARFAX COUNTY POLICE DEPARTMENT TO OBTAIN AND OPERATE ROUND-THE-CLOCK HELICOPTER SERVICES, TO BE OPERATIONAL BY APRIL 1983.

IN LINE WITH THE PROACTIVE NATURE OF THE REGIONAL EFFORT, I WANT TO BRING TO YOUR ATTENTION THE FOLLOWING ACCOMPLISHMENTS:

1). STANDARDIZATION OF DISASTER OPERATIONAL AND TESTING PROCEDURES FOR POLICE AND FIRE MUTUAL AID COMMUNICATIONS;

2). COORDINATION WITH JURISDICTIONS OUTSIDE METROPOLITAN WASHINGTON INCLUDING PARTS OF PENNSYLVANIA FOR USE OF COMMON MUTUAL AID REQUENCIES DURING DISASTERS (THIS INCLUDES TONE CODE ALERT DESIGNATION AND PROCEDURES);

3). INITIAL WORK ON STANDARDIZING TERMONOLOGY FOR EQUIPMENT, PERSONNEL, AND PROCEDURES RELATIVE TO DISASTER RESPONSE;

4). WORK BY AREA HOSPITAL ASSOCIATIONS AND COUNCILS TO DEVELOP A SYSTEM FOR INTER-HOSPITAL COMMUNICATION DURING DISASTERS;

5). DRAFTING OF MEMORANDUM OF AGREEMENT FOR USE OF MUTUAL AID CHANNELS IN DISASTER;

6). PILOT TESTING OF A MULTIJURISDICTIONAL FIRE FIGHTER TRAINING MODULE ON COORDINATED RESPONSES;

7). PILOT TESTING OF A MULTIJURISDICTIONAL TRAINING PROGRAM FOR MID-LEVEL FIRE OFFICERS;

8). DEVELOPMENT OF PRILIMINARY PERFORMANCE SPECIFICATIONS FOR MODILE COMMAND VEHICLES;

9). DEVELOPMENT OF PERFORMANCE OBJECTIVES FOR FIREFIGHTER LONG-TERM BREATHING GEAR FOR RESPONSE TO METRO INCIDENTS;

10). DEVELOPMENT OF SPECIFICATIONS FOR METRO EMERGENCY HAND CARTS FOR EVACUATING THE INJURED AND TRANSPORTING SUPPLIES AND EQUIPMENT IN THE TUNNELS;

11). PRELIMINARY DEVELOPMENT OF ON-SCENE COMMAND AND CONTROL IDENTIFICATION PROCEDURES;

12). DEVELOPMENT OF RECOMMENDATIONS ON METRO-RELATED DISASTER MEDICAL SUPPLIES;

13). DEVELOPMENT OF A CHANGE OF COMMAND PROCEDURE FOR USE AT THE SCENE OF A DISASTER;

14). DEVELOPMENT OF AN INCIDENT MANAGEMENT TEAM CONCEPT FOR USE AT THE SCENE OF A DISASTER.

FINALLY, MAJOR REVISIONS TO THE EXISTING POLICE AND FIRE AND RESCUE MUTUAL AID AGREEMENTS AND THEIR OPERATIONAL PLANS ARE UNDER EXAMINATION. THE POSSIBILITY OF A JOINT MUTUAL AID AGREEMENT FOR BOTH POLICE AND FIRE-RESCUE SERVICES HAS BEEN RAISED, AND IS BEING ACTIVELY CONSIDERED. DETAILED OPERATIONAL PLANS HAVE BEEN DRAFTED, ARE UNDER REVIEW NOW, AND WILL REPLACE THE EXISTING OPERATIONAL PLANS CURRENTLY IN USE.

THE IMPLEMENTATION APPROACH IN THE ACTION PLAN IS BASICALLY ON SCHEDULE, ALTHOUGH SOME SLIPPAGE HAS BEEN EXPERIENCED. SOME OF THE APPROACHES WHICH WERE INITIALLY THOUGHT TO REQUIRE SEPARATE, STAND-ALONE AGREEMENTS WILL BE RESOLVED BY REVISING AND STRENGTHENING OF THE MUTUAL AID AGREEMENTS AND OPERATIONAL PLANS AND THEREFORE SEPARATE AGREEMENTS WILL THANKFULLY, NOT BE REQUIRED.

I STATED AT THE OUTSET OF MY REMARKS THAT I WOULD CHARACTERIZE THE RESPONSE OF LOCAL OFFICIALS IN SEEKING TO IMPROVE THE EMERGENCY RESPONSE CAPABILITIES IN THE REGION. I THINK THAT THE LIST OF ACCOMPLISHMENTS I HAVE REVIEWED GIVES YOU SOME IDEA OF THE NATURE AND EXTENT OF THE INTEREST AND SUPPORT WHICH HAS BEEN GIVEN TO THIS EFFORT.

GENERAL SUPPORT AND ENDORSEMENT OF THE TASK FORCE RECOMMENDATIONS WERE SOLICITED FROM ALL COG MEMBER JURISDICTIONS, THE CONGRESSIONAL DELEGATION OF METROPOLITAN WASHINGTON, REGIONAL AGENCIES, AND RELEVANT FEDERAL AGENCIES IN JULY AND AUGUST OF 1982. LETTERS WERE RECIEVED IN RESPONSE TO THIS REQUEST FROM THE DISTRICT OF COLUMBIA, THE COUNTIES FAIRFAX, MONTGOMERY, PRINCE GEORGE'S, ARLINGTON AND PRINCE WILLIAM, AND THE CITIES OF ALEXANDRIA AND BOWIE. ENDORSEMENTS WERE ALSO RECEIVED FROM D.C. MAYOR MARION BARRY, GOVERNOR HUGHES OF MARYLAND, AND GOVERNOR ROBB OF VIRGINIA, SENATOR MATHIAS OF MARYLAND, CONGRESSMAN BARNES OF MARYLAND AND CONGRESSMAN PARRIS OF VIRGINIA, THE WASHINGTON METRO-AREA TRANSIT AUTHORITY, THE FEDERAL DEPARTMENT OF TRANSPORTATION, FEDERAL EMERGENCY MANAGEMENT AGENCY, DEPARTMENT OF THE INTERIOR, FOUR AREA HOSPITALS, (INCLUDING ST.ELIZABETHS, WALTER REED ARMY MEDICAL CENTER, CIRCLE TERRACE HOSPITAL, AND THE GREATER SOUTHEAST COMMUNITY HOSPITAL), AND THE DLCL HOSPITAL ASSOCIATION. FORMAL ENDORSEMENTS AND COMMITTMENTS FOR THE ACTION PLAN APPROVED IN JANUARY ARE BEING SOLICITED FROM THE SAME KEY GROUP OF PARTICIPANTS, AS WELL AS THE PRESIDENT OF THE UNITED STATES.

THE ACTION PLAN WHICH WAS APPROVED BY THE COG BOARD IN JANUARY WAS ACCOMPANIED BY A PROPOSAL TO FINANCE ITS PROVISIONS WITH FUNDS FROM COG, AND FUNDS AND ASSISTANCE FROM THE FEDERAL AVIATION ADMINISTRATION, THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION, THE FEDERAL EMERGENCY MANAGEMENT AGENCY, THE DEPARTMENT OF INTERIOR, THE DISTRICT GOVERNMENT AND THE STATE GOVERNMENTS OF VIRGINIA AND MARYLAND.

INDIVIDUALLY, THE LOCAL JURISDICTIONS CONTRIBUTE FINANCIALLY ON AN IN-KIND BASIS THROUGH THE DEDICATION OF THEIR PERSONNEL TO THIS EFFORT, AND

THE TIME DEDICATED HAS BEEN SIGNIFICANT.

THE COG BUDGET FOR THE CURRENT FISCAL YEAR, AND THE ONE APPROVED IN DECEMBER FOR FY 1984 ALREADY INCLUDE $86,777 AS ITS SHARE OF A PROPOSED BUDGET OF $286,777 FOR THIS 24-MONTH EFFORT.

AS I HAVE STATED, WE HAVE REQUESTED IN RECENT LETTERS TO THE RELEVANT FEDERAL AGENCIES FINANCIAL SUPPORT AND COMMITTMENT OF OTHER RESOURCES TO THIS EFFORT. ONE AREA IN WHICH WE ARE ESPECIALLY HOPEFUL THAT HELP WILL BE FORTHCOMING IS IN THE AREA OF COMMUNICATION. WE HAVE PROPOSED THAT FEMA PROVIDE FUNDS FOR A TECHNICAL CONSULTANT STUDY OF THE REGION"S DISASTER COMMUNICATIONS CAPABILITIES. THE ESTIMATED COST IS $45,000. COG DOES NOT HAVE AN IN-HOUSE COMMUNICATIONS DESIGN ENGINEER OR SPECIALIST, AND ALTHOUGH THE LOCAL SYSTEM OPERATORS CAN ARTICULATE PROBLEMS WITH THEIR EQUIPMENT AND ITS SHORTCOMINGS, AN OVERALL REGIONAL ASSESSMENT IS BEYOND OUR EXISTING CAPABILITIES. WE HAVE WORKED TO ADDRESS THE "PEOPLE PROBLEMS" WHICH CAN BE SOLVED BY BETTER PROCEDURES AND GUIDELINES FOR OPERATING BUT IN THE TECHNICAL AREAS WE NEED CONSULTANT HELP, AND WILL LOOK TOWARD FEDERAL ASSISTANCE FOR THIS.

IN OTHER AREAS WHERE SPECIAL EXPERTISE IS NEEDED, WE HAVE ALSO SOUGHT FEDERAL ASSISTANCE. THE FAA HAS PROVIDED A ROTO-CRAFT SPECIALIST TO ASSIST IN DEVELOPMENT OF THE AIR RESPONSE, COMMAND AND CONTROL PORTION OF OUR PLAN. THIS SPECIALIST MET FOR THE FIRST TIME THIS WEEK WITH THE PROVIDERS OF HELICOPTER SERVICES IN THE REGION, INCLUDING MARYLAND STATE POLICE, VIRGINIA STATE POLICE, METROPOLITAN POLICE DEPARTMENT, UNITED STATES PARK POLICE, AND FAIRFAX COUNTY POLICE DEPARTMENT. WE WILL BE SEEKING ADDITIONAL REPRESENTATION FROM THE MILITARY DISTRICT OF WASHINGTON, AND OTHER APPROPRIATE MILITARY SOURCES AT THE WORK GETS UNDERWAY.

IN ADDITION TO THEIR INVOLVEMENT ON THE AIR RESPONSE, COMMAND AND CONTROL TECHNICAL COMMITTEES THE U.S. PART POLICE, INCLUDING CHIEF LYNN HERRING AND HIS STAFF HAVE BEEN ACTIVELY INVOLVED IN OTHER ASPECTS OF THIS EFFORT, INCLUDING DEVELOPING THE ACTION PLAN, THE REVIEW AND REVISION OF MUTUAL AID AGREEMENTS AND OTHER ACTION PLAN IMPLEMENTATION EFFORTS.

THE FINACIAL PLAN PROPOSES SUPPORT FROM NHTSA FOR THE EMERGENCY MEDICAL SERVICE COMPONENTS OF THE EFFORT, AND FROM THE PUBLIC HEALTH SERVICE TO SUPPORT DEVELOPMENT OF THE REGIONAL INTER-HOSPITAL COMMUNICATION NETWORK WHICH IS NEEDED. AS I HAVE STATED, THESE LETTERS REQUESTING ASSISTANCE HAVE ONLY RECENTLY GONE OUT, AND WE HOPE FOR A RAPID POSITIVE RESPONSE NOT ONLY FROM THE FEDERAL AGENCIES, BUT FROM THE THREE STATES FROM WHOM ASSISTANCE HAS BEEN REQUESTED, AND CONTINUING STRONG SUPPORT FROM AREA LOCAL GOVERNMENTS. I HAVE PROVIDED AN OVERVIEW OF THE COG RECOMMENDATIONS, A DISCRIPTION OF THE SUPPORT AND COMMITMENT DEMONSTRATED THUS FAR AND DESCRIPTION OF THE CONSOLIDATED FUNDING PROPOSAL FOR DEVELOPMENT OF A REGIONAL EMERGENCY RESPONSE MANAGEMENT PLAN. I WOULD LIKE TO CLOSE BY OFFERING TWO SUGGESTIONS FOR ADDITIONAL IN VOLVEMENT OF THIS SUBCOMMITTEE.

TWO SUPPORTIVE MEASURES WHICH COULD BE TAKEN BY THIS SUBCOMMITTEE INCLUDE:

FIRST OF ALL, ENCOURAGING THE RELEVANT FEDERAL AGENCIES TO PROVIDE SUPPORT AS REQUESTED IN THE FINANCIAL PLAN AND THE ACTION PLAN:

AND

SECOND OF ALL, ASSIST IN THE IDENTIFICATION OF A SINGLE POINT FOR COORDINATING FEDERAL AND MILITARY LIASON EFFORTS IN THIS PROGRAM TO IMPROVE THE REGION"S RESPONSE CAPABILITIES.

BOTH OF THESE MEASURES WOULD BOTH AUGMENT THE LIMITED STAFF AND SUPPLEMENT THE LOCAL GOVERNMENT COMMITTMENTS. AT COG, THEY WOULD ALSO DEMONSTRATE THE COMMITTMENT OF THE FEDERAL SECTOR TO THIS METROPOLITAN COMMUNITY, TO ITS FEDERAL WORKERS, TO ITS CITIZENS RESIDENTS, AND TO ITS ANNUAL MILLIONS OF VISITORS.

REPORT OF THE

METROPOLITAN EMERGENCY RESPONSE TASK FORCE:

RECOMMENDATIONS TO STRENGTHEN THE REGIONAL EMERGENCY RESPONSE CAPABILITY OF THE METROPOLITAN WASHINGTON AREA

APPROVED BY
THE COG BOARD OF DIRECTORS
JUNE 9, 1982

PREPARED BY
DEPARTMENT OF HUMAN RESOURCES AND PUBLIC SAFETY
METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS
1875 EYE STREET, N.W.

MAY 19, 1982

R19-82
Adopted June 9, 1982

METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS
1875 Eye Street, N.W.
Washington, D. C. 20006

RESOLUTION ENDORSING THE REPORT AND RECOMMENDATIONS OF THE EMERGENCY RESPONSE TASK FORCE AND AUTHORIZING IMPLEMENTATION OF RECOMMENDATIONS TO IMPROVE THE DISASTER RESPONSE CAPABILITY OF THE METROPOLITAN WASHINGTON AREA

WHEREAS, on January 13, 1982, the Metropolitan Washington Area experienced a sequence of emergency events which caused the mobilization of public safety resources throughout the region; and

WHEREAS, effective, multijurisdictional emergency response in the Metropolitan Washington Area requires a high level of coordination, mutual aid and cooperation among public safety agencies; and

WHEREAS, the Board of Directors of the Metropolitan Washington Council of Governments (Council), in recognition of the need to improve the region's capability to respond to disaster situations, established in February 1982, the Metropolitan Emergency Response Task Force, comprised of local public safety professionals to review the emergency response actions and activities of January 13, 1982, and prepare recommendations to improve the region's emergency management and response capabilities; and

WHEREAS, the Metropolitan Emergency Response Task Force has completed its report and recommendations which are attached and made part of this resolution and have been reviewed and endorsed by the Public Safety Policy Committee, the Emergency Medical Services Policy Committee and the Chief Administrative Officers' Committee.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS THAT:

1. The Board of Directors endorses the report and recommendations of the Emergency Response Task Force, and authorizes the Executive Director to initiate the following actions to implement the recommendations:

a. Establish priorities among recommendations and develop an Action Plan for Implementation for approval by the Board of Directors.

b. Seek the support and commitment to the Action Plan of all appointed and elected officials of governmental entities and medical personnel and facilities responsible for emergency services in the metropolitan area with specific focus on:

- The commitment of time and energy by area public safety professionals to establish and maintain the regional procedures, mechanisms and training which are recommended; and
- Support for a metropolitan level staff effort to focus and coordinate the implementation efforts of public safety professionals; and
- Commitment and support for this Action Plan by all major local governments within the metropolitan area; and
- Commitment and support for this Action Plan by the Mayor of the District of Columbia, the Governor of the State of Maryland and the Governor of the Commonwealth of Virginia; and
- Significant involvement and support for this Action Plan by Federal entities in the region; and
- Support to seek funding to carry out the recommended metropolitan area implementation plan.

c. Progress on the implementation of the Action Plan shall be reported on a bi-monthly basis to the Chief Administrative Officers' Committee.

2. This Resolution and Metropolitan Washington Emergency Response Task Force Report and Recommendations shall be transmitted to the following governmental entities for review, formal endorsement and appropriate action:

- COG Member Jurisdictions;
- The Metropolitan Washington Congressional Delegation;
- The Mayor of the District of Columbia;
- The Governor of Maryland;
- The Governor of Virginia;
- The U.S. Department of Transportation
- The Federal Emergency Management Administration;
- The Washington Metropolitan Area Transit Authority;
- The hospitals and hospital associations in metropolitan Washington;
- The U.S. Department of Interior.

ACKNOWLEDGEMENT

The Chairman and Members of the Metropolitan Emergency Response Task Force wish to express a special note of appreciation to Ms. Sandra Freck, and Ms. Stacia Z. Moss of the Metropolitan Washington Council of Governments, and to Ms. Marilyn Marable of the Washington Hospital Center. Their diligent efforts were key to the completion of this report.

MEMBERS AND PARTICIPANTS OF THE TASK FORCE

MEMBERS

CHAIRMAN: Selby C. Jacobs, Prince William County
Chairman, Disaster and Emergency
Preparedness Committee

1. Chief Carrol D. Buracker, Fairfax County
   Chairman, Police Chief's Steering Committee
2. Howard R. Champion, M.D., Director, Surgical Critical Care Services, Chief, Trauma Service and MedSTAR, Washington Hospital Center
   Chairman, EMS Policy Committee
3. Chief Warren E. Isman, Montgomery County
   Chairman, Fire Chiefs Technical Committee
4. Chief Thomas Hawkins, Arlington County Fire Department
5. Chief Charles Rule, City of Alexandria Fire Department
6. Chief Fire Marshal O. R. Dube, Loudoun County Fire and Emergency Preparedness
7. Chief M. H. "Jim" Estepp, Prince George's County Fire Department
8. Chief Maurice T. Turner, Jr., Metropolitan Police Department of the District of Columbia
9. Chief Theodore Coleman, Acting Fire Chief, District of Columbia Fire Department

PARTICIPANTS

Major Thomas Shaw, Fairfax County Police Department
Lt. Stephen D. Danzig, Fairfax County Police Department
Robert W. Hooker, Fairfax County Police Department
Deputy Chief Ray Nieves, Prince George's County Fire Department
Deputy Chief Walt Lanier, Prince George's County Fire Department
Captain George Lyon, Arlington County Fire Department
Lt. Jerome L. Rollins, Metropolitan Police Department
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Deputy Chief Maurice D. Kilby, District of Columbia Fire Department
Assistant Chief Harry Shaffer, District of Columbia Fire Department
Assistant Chief Joseph Kitt, District of Columbia Fire Department
Battalion Chief Gary Palmer, District of Columbia Fire Department
Battalion Chief McEldon Fleming, District of Columbia Fire Department
Jon O. Nusser, District of Columbia Fire Department
Lt. Theodore Holmes, District of Columbia Fire Department
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EXECUTIVE SUMMARY

This document represents the concensus recommendations of Metropolitan experts to improve Metropolitan regional disaster planning and response. Although a thorough analysis of the events of January 13, 1982, was an essential prerequisite for the deliberation that led to these recommendations, the events of that date have been fully reported and critically appraised in numerous other documents.

This document synthesizes the constructive comments that resulted from such critical appraisals and provides specific recommendations for interagency planning and response to future disasters.

Germaine to successful planning for disaster response is a recognition that the response must be an actual outgrowth of everyday operations and must allow for a modulated and specific deployment of resources to the identified needs of the circumstances. The eight major jurisdictions, as well as many municipalities of the Metropolitan Washington area will each have disaster plans which will enable their own resources to be maximized in the event of a disaster. The recommendations herein call for these plans to be reviewed and revised where necessary to ensure a commonality in definition of need, in communications, in application of regional resources to a disaster in any given jurisdiction. Inherent flexibility is essential to both successful planning and response to disasters.

The first section of the document focuses on the planning and organization which must take place at the metropolitan level to ensure continued improvement through implementation of disaster planning for response systems. Strengthening and updating of the Mutual Aid agreements, implementation of regionwide training and familiarization of metropolitan disaster responses, and a coordination of metropolitan planning and evaluation of need are regarded as essential.

Specific recommendations with regard to the disaster response in the Metropolitan region identify performance standards for notification and alert of disasters in the Metropolitan region and describe the general characteristics of a response to a disaster. An important recommendation dwells on the mobilization of response to a disaster. It is essential to realize that although a Metropolitan alert may be desirable, a Metropolitan response to a disaster should be considered separately and should be evoked only at the specific request of the Incident Commander, after an appraisal of the nature and extent of the disaster. Sections dealing with prehospital EMS response, incident command and control, air response command and control, communication, and regional hospital response, focus predominantly on guidelines that will allow for commonality throughout the region, thus enabling a greater understanding of the interjurisdictional responses to specific circumstances and a smoother coordination of all of the resources available throughout the Metropolitan area.

The final section of this report addresses the fiscal considerations relating to the metropolitan planning and emergency response recommendations which are detailed in earlier sections. This section on fiscal considerations does not attempt to identify the specific costs involved, but rather, presents the reasoned assumptions identified by the Task Force, the general categories of funding need, and urges that all possible avenues of support and funding be explored to implement the recommendations contained in this report.

A fundamental lesson was learned on January 13th. That is, despite the existence of excellent disaster response plans in many jurisdictions, there is a clear and definite need fo. coordination of Metropolitan capabilities.

It is hoped that this document will provide the underpinnings for a coordinated implementation of systems and the extensive resources available in the Metropolitan area in the event of any natural or manmade disaster.

INTRODUCTION

This report has been prepared in response to the events of January 13, 1982, when the Metropolitan Washington area experienced a sequence of events which caused the mobilization of public safety resources throughout the region. A blinding snowstorm, early release of federal, state and local employees, a plane crash into the 14th street bridge and Potomac River and the derailment of a METRO train, during peak usage, provided circumstances which vigorously emphasized the need for regional disaster response, coordination, and cooperation.

This report presents recommendations which are targeted to improving the disaster response and management capabilities of the region as a whole.

The District of Columbia Mayor's Special Task Force on Emergency Response, the Public Safety Policy Committee and the Emergency Medical Services Policy Committee of the Metropolitan Washington Council of Governments studied all elements of the regional disaster response to these events. A total of twenty committees and subcommittees (See Appendix 1), produced a series of focused recommendations. Recommendations of regional importance produced by all these studies were integrated by the Emergency Response Task Force into this report. This group was charged by the Council of Governments Board of Directors with the task of examining "the emergency response actions and activities associated with the Metropolitan Washington area conditions of January 13, 1982", and developing "recommendations to strengthen the regional emergency response capability."

The recommendations represent a collaborative and focused effort of experts and policy makers throughout the Metropolitan region toward improving the Metropolitan response to major incidents.

It is intended that these recommendations be used as a framework for improvements in commonality, organization, and level of response offered by each jurisdiction in future disasters in the Metropolitan Area.

DEFINITION AND CLASSIFICATION OF DISASTERS

DEFINITION: A disaster is a serious disruption to life, public order, security or safety that arises with little or no warning. It causes or threatens death or injury to a number of people in excess of those who could be dealt with by public services operating under normal conditions, and thus requires special mobilization of those services.

CLASSIFICATION: A disaster should be classified in a manner which will enable the incident commander to request specific types and levels of response. Classification must describe the nature and extent of the problem.

NATURE: Disasters can be simple (a railway accident) or compound (an earthquake.) Confrontation disasters are those that are associated with war or terrorist activities. Natural disasters include floods, earthquakes, epidemics and famine. Technological disasters result from the failure of increasingly complex systems used to support society or personnel who operate them. Technological disasters may include peace time chemical or radiations exposure, building or bridge or other structural collapse, fire, transport system accidents, involving aircraft, ships, trains or motor vehicles.

EXTENT: The extent must identify an estimate number of victims killed or injured, or at risk of death or injury, thus requiring in general the level of regional response shown.

Not all disasters involve threat to or loss of life and must be described in terms other than those given here, e.g., acres involved in fire, potential threat to life.

LEVEL	**KILLED/INJURED**		**REQUIRING HOSPITALIZATION**	**RESPONSE**
Minor	Up to 25	and /or	Up to 10	Local jurisdiction only, with subregional notification.
Moderate	Over 25, Up to 100	and /or	Over 10, Up to 50	Subregional plus regional alert, including regional Trauma Centers.
Major	Over 100 *	and /or	Over 50*	Regional Response, with extraregional states and military alerted.*

CLEARLY IT IS THE RESPONSIBILITY OF THE MOST SENIOR LOCAL AUTHORITY AT THE SITE OF A DISASTER TO INITIALLY DETERMINE THE NATURE AND EXTENT OF THE DISASTER, SO THAT AN APPROPRIATE DISASTER RESPONSE CAN BE INITIATED.

*At some point it is anticipated that the level of the disaster could dictate significant Military/National Guard involvement and response.

GLOSSARY

REGIONAL/METROPOLITAN: The geographical area encompassed by the members of the Metropolitan Washington Council of Governments, including: the counties of Arlington, Fairfax, Loudoun, Montgomery, Prince George's, and Prince William; the District of Columbia; and the cities of Alexandria, Bowie, College Park, Fairfax City, Falls Church, Gaithersburg, Greenbelt, Rockville and Takoma Park.

JURISDICTION: A single geographical area defined by boundaries, with its own elected body, and public safety agencies with resources to respond to a disaster.

SUB-REGIONAL: Sub-divisions of the metropolitan Washington area, which are comprised of one or more jurisdictions which are governed by a common superceding elected body: the Northern Virginia jurisdictions of the Council of Governments comprise one sub-region; the District of Columbia the second; and the Maryland jurisdictions a third.

MARNIS: Mutual Aid Radio Network Interface System.
A communications linkage which enables mobile communications between police cruisers from different jurisdictions. This system is currently available to the cities of Alexandria, and Herndon, the counties of Arlington, Fairfax, Loudoun, Prince George's, Metropolitan Police Department of the District of Columbia, and the Maryland State Police.

PMARS: Police Mutual Aid Radio System.
A regional law enforcement communications system designed to give a police communications center the capability of instant communications with one or more other police communications centers. Its members include 12 county and municipal jurisdictions, Metropolitan Police Department of the District of Columbia, the Maryland and Virginia State Police, the Military District of Washington, the U.S. Park Police, Ft. Belvoir, and the Armed Forces Police.

FMARS: Fire Mutual Aid Radio System.
A regional fire/rescue communications system designed to give a fire/rescue communications center the capability of instant communications with one or more other fire/rescue communications centers. Its members include the eight major jurisdictions in the Metropolitan Washington area, in addition to the two FAA owned airports, and Ft. Belvoir.

Command Post: - A physical location at which the Incident Commander exercises command and control over the entire incident.

Mobile Command Vehicle - A vehicle, specially equipped with communications capabilities and other resources which may be brought to the scene of a disaster to serve as the facility for the Command Post.

Incident Commander: - Responsible individual from the appropriate public safety agency of the affected jurisdiction on the incident scene who is responsible for the management of the available manpower and equipment to achieve the maximum benefit.

Operations Officer: - Responsible for the implementation of the strategic decisions of the Incident Commander.

Water Supply Officer: - Responsible for the development of adequate water sources in fire suppression situations to implement the tactics as outlined by the Incident Commander.

Liaison Officer(s): - Responsible to coordinate with other appropriate agencies as needed or requested by the Incident Commander, including local, federal, state and private sector agencies.

Public Information Officer: - Responsible for the dissemination of factual and timely reports to the news media.

Staging Officer: - Responsible for the orderly collection of units and personnel at a location (staging area) separate from the incident scene that provides good access to the incident.

Resource Officer: - Responsible to acquire supplies and equipment as requested by the Incident Commander.

Triage Officer: - Responsible to coordinate the medical survey of the incident scene to estimate the extent of injuries and needed assistance.

Communications Officer: - Responsible for the handling of radio and telephone communications for the Incident Commander.

Air Control Officer: - Individual in the command helicopter with responsibility to coordinate helicopter activities under the general direction of the Incident Commander.

Incident Security Officer: - Responsible for security of the scene, maintaining the public order and screening of individuals to insure that only authorized persons may access the area.

Command Physician: - A physician trained in emergency care and treatment of the critically injured, who is deployed to the disaster site by the local medical command hospital.

PLANNING AND ORGANIZATION

A. Metropolitan Planning Recommendations

1. Objective

   Improve regional emergency management capabilities in the Metropolitan Washington area.

2. Assumptions:

   - The key to successful multi-agency, multi-jurisdictional response is planning.

   - The strategy for a regionwide disaster response must be multidimensional and strongly rooted in uniform operational guidelines among area public safety agencies.

   - Successful emergency management planning requires participation by all affected agencies and commitment of elected and appointed officials to the result of the planning process.

   - The COG Committee structure does now and should continue to provide a forum for exchange of information and review of events related to emergencies of significant response.

3. Recommendations:

   a. **The recommendations of the Task Force should be used as a basis for a metropolitan area emergency management plan for disaster. Further detailed planning is needed in:**

      1) Emergency Communications Management

         - Identify and correct communication gaps or any overlapping communications capabilities.

         - Identify requirements for effective emergency communications which would serve all of the metropolitan Washington area and their respective States and appropriate federal agencies.

2) Airport Emergency Response

- Conduct an assessment of airport and regional emergency response capabilities to air disasters in the metropolitan area.
- Consider the extension of the Washington National Airport Emergency Operations secondary response area north to the Memorial Bridge, east to include the Potomac River, and south to the Wilson Bridge.

3) METROrail Emergency Response

- Review, evaluate, and coordinate multiagency policies and procedures for evacuation of passengers and employees from the METRO system.
- Improve policies and equipment to insure local site control for de-energizing third rail power in the METRO system.
- Metro should supply and maintain disaster medical supplies, as specified by the Fire Chiefs Technical Committee, readily accessible to every rail station and in tunnels throughout the METRO system.

- Metro should design, build, and maintain portable rail carts capable for bringing rescue supplies quickly to a METROrail location and evacuating people.

- Develop regional recommendations and procedures for adequate breathing apparatus for use in METRO subway incidents.

- Develop emergency response communications procedures for the subway.

- Conduct regional disaster drills around the scenario of a METROrail disaster.

b. Implement guidelines to insure regionally standardized and compatible equipment, terminology, and procedures during disaster circumstances.

- Implement a regionally standardized system of disaster classification in terms of disaster magnitude, which would be used as the basis for evoking a specific response:

  Minor - handled locally with subregional alert.
  Moderate - Handled subregionally with regional alert. Trauma centers throughout the regional alerted.
  Major - handled regionally with extraregional states and military alerted.

c. Review local emergency plans for a minor disaster to insure general compatibility of standards and intent.

d. Identify who has authority for different types of disasters locally, and subregionally.

e. Define Federal disaster resources, roles and responsibilities.

f. Washington National and Dulles Airports and the jurisdictions of the metropolitan area must better coordinate disaster planning and response, including:

  - Integration of airport emergency communications with existing Metropolitan area disaster response procedures.
  - Training of airport personnel regarding their role in regional disaster execises.
  - Integration of Trauma Center resources into the airports regional disaster response capabilities.
  - Direct involvement with local jurisdictions scheduling yearly full-scale regional disaster response testing.

g. Develop and disseminate information on special disaster response resources within the Metropolitan area; recommend methods for employing these resources on a regional basis. This would include information on:

  - Available aircraft, their carrying capacity, on-board equipment, hours of operations and procedures for mobilization, especially for water rescue purposes.
  - Special equipment carried on emergency response units.
  - Special hospital capabilities.
  - Identification of predetermined staging areas in the region.

B. Training and Manpower Development

1. Objective

To provide public safety personnel with the skill, knowledge, and expertise to respond rapidly, effectively and appropriately to disasters in the Metropolitan Washington Area.

2. Assumptions:

- Training and familiarization programs are essential to improving disaster response.
- Public Safety agencies can strengthen the ability to respond to disasters by instituting multi-disciplinary training efforts;
- Training programs and familiarization programs are qualitatively different, but equally necessary;
- There exists a wealth of resources in the region, both in experienced personnel and facilities, which may assist in multidisciplinary training.

3. Recommendations:

a. Institute regionwide disaster training programs which include instruction on:

  - communications
  - mobilization of various Public Safety Agencies
  - command and control procedures
  - triage
  - medical care at the scene and enroute to the hospital

b. Stage periodic and regular regionwide disaster drills around specific scenarios.

c. As a learning tool, provide debriefings and evaluations for disaster response personnel after a disaster drill or actual response.

d. Institute familiarization program for Command Physicians and for physicians forming Physicians Response Teams from the designated regional Trauma Centers.

C. Mutual Aid Agreements

1. Objective
   Improve Mutual Agreements to facilitate regional disaster response.

2. Assumptions:

   - That the procedural aspects of the Mutual Aid Agreements, as well as their operational plans are of value.

   - That there are geographical areas which present special problems that are inadequately addressed under existing Agreements.

3. Recommendations:

   a. The operational plans for the Police, Fire/Rescue Mutual Aid Agreements should be expanded and improved to:
      1. Specify the authority of the District of Columbia and Maryland in emergency response to incidents occuring in the Potomac.

      2. Provide for delegation of responsibility under Mutual Aid.

      3. Specifv the authority of either the police chief or fire chief of the requesting jurisdiction to request aid under the terms of either the Police or Fire/Rescue Mutual Aid Agreements.

      4. Define the role and responsibilities of multi-jurisdictional organizations such as WMATA and the Metropolitan Airports Management and the U.S. Park Police in the Police, and Fire/Rescue Mutual Aid Operational plans.

   b. Include the United States Park Police in the police and fire/rescue mutual aid agreements

EMERGENCY RESPONSE AND RECOMMENDATIONS

A. Notification and Alert

1. Objective

   Insure that all appropriate and necessary public agencies are rapidly informed of a disaster.

2. Assumptions:

   - The common and mutual aid channels for police and fire should be primary mechanisms for notification and alert.

   - The GP2200 Civil Defense Phone is a secondary mechanism for notification and should not be used as part of the primary alert.

   - Notification and alert do not necessarily imply that a specific response is required from any jurisdiction or agency.

   - Any response to a disaster site or scene should be based on a specific request from the indicent commander.

3. Recommendations:

   a. Mutual Aid Channels should be used for notification and alert in the event of a disaster. These are:

Fire Mutual Aid Radio System (FMARS)	154.280
Police Mutual Aid Radio System (PMARS)	453.500 458.500
EMS Call Channel I	462.950 468.950
NOVA Mutual Response Frequency	154.265

   After notification and alert of a disaster in the Metropolitan region has occurred (See Communication Section) every effort must be made to keep these channels opened for the commanding jurisdiction.

   b. Implement a policy reinforcing that the GP2200 or Civil Defense Phone is not to be used for general, all-purpose assistance calls in the event of a disaster.

   c. Develop standard procedures for notification and alert of regional hospitals.

B. General Nature of Response to a Disaster Site.

1. Objective

To insure a general understanding of the role and responsibility of the primary agencies involved in a disaster response.

2. Assumptions:

- The specific nature of a disaster response will vary somewhat from jurisdiction to jurisdiction throughout the region.

- In the event of a disaster, the performance of the individuals responding is enhanced when the activities they perform are within the scope of their normal response to events.

3. Recommendations:

a. That each jurisdiction clearly specify who the command of a given disaster rests with, depending on the type of incident.

b. That each jurisdiction insure the availability of a mobile command vehical for moderate and major disasters.

c. That the general responsibilities and role of the primary responders be as follows:

- Fire Department: Rescue and Fire Fighting
- Police: Security of the Disaster Site
  Security of the staging area
  Security of a perimeter
  Maintenance of Public Order
- Emergency Medical Services: Prehospital emergency medical care.
  Prehospital triage and Patient transport by land.
- Local emergency physicians: General Medical control of Advance Life Support.
  Prehospital care and Patient Triage.

C. Mobilization of Resources

1. Objective

Rapid mobilization of regional resources occurring only at the request of the incident commander.

2. Assumptions:

- If not explicitly controlled, the response will often exceed the need.
- Over-response decreases effectiveness of disaster management and unnecessarily drains resources.
- The extent of disaster mobilization should depend on the extent and nature of the disaster as determined by the incident commander.

3. Recommendations:

a. In the event of a disaster, the local jurisdiction should promptly dispatch a senior responsible officer to the scene to function as Incident Commander.

b. The Incident Commander should assess the extent and nature of the disaster, identify the type of disaster, the level of disaster (number of casualties) and the response required.

c. The Incident Commander should specifically communicate the response needed to the Local jurisdiction's Communications Center.

d. The Incident Commander should identify to the Communications Center the staging area.

e. The Communication center should dispatch a mobile command vehicle to the disaster site.

e. The Communications Center, through the Mutual Aid Channels, should communicate a disaster notification and alert to the region appropriate to the anticipated need.

f. The Communications Center, should insure that appropriate regional notification, alert, and specific support requests are transmitted and received.

g. The Communications Center, through the Mutual Aid Channels, should relay information about access routes, and staging areas to those agencies which have been requested to respond.

h. The response mobilized should be maintained until the Incident Commander dismisses the alert.

i. Those agencies mobilized for support should respond with personnel and equipment as specifically requested and should respond to the staging area only.

D. Prehospital Emergency Medical System Response

1. Objective
   To insure smooth mobilization of needed resources to provide emergency medical services in the event of a disaster.

2. Assumptions:
   - Fire and Police Departments will insure safety, firefighting and security, thus the medically qualified personnel are free to identify the extent and nature of the medical needs.
   - Clear and prompt identification and communication of medical needs facilitate the salvage of life in the event of a disaster.
   - There is some question as to the adequacy of existing state laws regarding reciprocity.

3. Recommendations:
   a. The Incident Commander shall delegate authority to the most medically qualified respondent (EMT-A/IP/P*) to the scene of a disaster, who shall survey the disaster area to estimate the number, type and severity of the casualties.

   b. The most medically qualified respondent to the scene shall clearly transmit this information to the Incident Commander with specific recommendations as to the needs of the victims.

   c. The Incident Commander shall clearly requests the level of regional response and THE SITE OF THE STAGING AREA.

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* PRE-HOSPITAL TRAINING EQUIVALENCIES

District of Columbia		Virginia		Maryland
Emergency Medical Technician-Intermediate Paramedic (EMT-IP)	=	Cardiac Care Technician (CCT)	=	Cardiac Rescue Technician (CRT)

EMT-A's and Paramedics (EMT-P's) are uniform across the region

d. The local medical command hospital shall deploy a Command Physician to the site of a disaster (See Hospital Response), who will assume authority for medical care rendered at the scene and will coordinate with the Incident Commander regarding general disaster management.

e. Performance of primary triage and treatment at the disaster site should be conducted by certified paramedics, EMT's or other certified emergency medical service personnel, operating under regionally standardized and approved emergency protocols authorizing procedures without medical control.

f. Such protocols shall be developed through the EMS Policy Committee of COG.

g. Emergency Medical Care and Triage at the scene will be implemented by Triage Treatment Teams consisting of at least one medically qualified (EMT) and one rescue person.

h. The physician responding to the site of a disaster will assess the need for physicians on the scene and so recommend to the incident commander. All responding physicians are under the authority of the Command Physician.

i. Physicians should be mobilized to the disaster scene by the incident commander if there is an anticipated delay in patient transport, a need for on-site surgical intervention or trapped victims.

E. Incident Command and Control

1. Objective

Enhance the ability of the region's public safety agencies during disaster operations by improving and standardizing guidelines of operation for command and control.

2. Assumptions:

- The local government in which the incident occurs is in charge of the incident, unless a pre-existing arrangement or agreement is in force.
- Multiple agencies will be responding to the same incident;
- The Incident Commander is responsible for command and control at the scene.
- The Command Post method of operation is an effective resource management tool.
- The command structure must be visible and effective.
- The adoption of a uniform regional color-coding scheme for key command personnel would aid in rapid identification of command at the scene.
- All respondents to a disaster are subordinate to the Incident Commander until an officially communicated change of command.
- Due to the geographic location of the disaster, the jurisdiction in which the disaster occurs may need to locate its command post in a neighboring jurisdiction, in order to optimize the command post function.

3. Recommendations:

a. The following color-coding scheme could be employed to designate the functional areas at the site of a disaster:

STAGING AREA : FLORESCENT LIME LIGHT
MOBILE COMMAND POST : FLORESCENT YELLOW
TRIAGE AREA : FLORESCENT WHITE, WITH ONE STRIPE OF INTERNATIONAL ORANGE

b. This color-coding scheme should be displayed with flags mounted on staffs or poles at least 12 feet off the ground. It is recommended that the flags themselves be at least 3 feet by 2 feet in size.

c. A uniform system for identifying command personnel shall be adopted and implemented by area jurisdictions.

d. Clear identification of command personnel shall include, but not be limited to the following personnel at the scene:

Incident Commander
Highest Ranking Police
Fire and Rescue
EMS
Physician

e. Only the personnel authorized by the Incident Commander shall wear such identification.

f. Implement a familiarization program to ensure that there is a clear understanding on the part of all jurisdictions on how their units will communicate with and be controlled by the Command Post of the jurisdiction under whose control the disaster the occurring.

g. To smoothly accomplish change of command at the scene, an incoming Commander shall determine what actions have been taken and the resources which have been requested before accepting command from the previous Incident Commander.

h. A change of command shall be communicated regionally through Mutual Aid Channels.

i. All jurisdictions shall adopt these terms for command post operations:

- Command Post - A physical location at which the Incident Commander exercises command and control over the entire incident.
- Incident Commander - Responsible individual from the appropriate public safety agency or the affected jurisdiction on the incident scene who is responsible for the management of the available manpower and equipment to achieve the maximum benefit.
- Operations Officer - Responsible for the implementation of the strategic decisions of the Incident Commander.
- Water Supply Officer - Responsible for the development of adequate water sources in fire suppression situations to implement the tactics as outlines by the Incident Commander.
- Liaison Officer(s) - Responsible to coordinate with other appropriate agencies as needed or requested by the Incident Commander, including local, federal, state and private sector agencies.
- Public Information Officer - Responsible for the dissemination of factual and timely reports to the news media.

- Staging Officer - Responsible for the orderly collection of units and personnel at a location (staging area) separate from the incident scene that provides good access to the incident.

- Resource Officer - Responsible to acquire supplies and equipment as requested by the Incident Commander.

- Triage Officer - Responsible to coordinate the medical survey of the incident scene to estimate the extent of injuries and needed assistance.

- Communications Officer - Responsible for the handling of radio and telephone communications for the Incident Commander.

- Air Control Officer - Individual in the command helicopter with responsibility to coordinate helicopter activities under the general direction of the Incident Commander.

- Incident Security Officer - Responsible for security of the scene, maintaining the public order, and screening of individuals to insure that only authorized persons may access the area.

- Command Physician - A physician trained in emergency medicine and treatment of the critically injured, who is deployed to the disaster site by the local medical command hospital.

F. Air Response, Command and Control

1. Objective

   Enhance the disaster response by devising standard guidelines for air command and control.

2. Assumptions:

   - The FAA controls air space near airports (terminal control area).
   - The helicopter offers unique capabilities of rescue and rapid transport which need to be incorporated into the disaster response.

3. Recommendations:

   a. In disasters outside the terminal control area (uncontrolled airspace), one helicopter should be given air command and control authority.

   b. Responding helicopters will be staged and coordinated by the Command helicopter.

   c. The Command helicopter will exchange communication and receive directions from the Incident Commander as to helicopter service needs.

   d. Standard procedures for mobilizing communications with airborne units need to be developed.

   e. Helicopters must be equipped with Frequency 123.05 to communicate with regional medical control hospitals.

   f. Establish the number, type, and capabilities of helicopters needed, and insure their availability on a sub-regional basis to provide normal law enforcement, fire and rescue services, as well as to perform specific local, sub-regional, and regional disaster responses. The range of capabilities these units may possess are discussed in Appendix 3

G. Communication

1. Objective

To insure secure simple and accurate communication between personnel at the following locations:

a. The scene of the disaster and the command post;

b. The command post and the jurisdictional Communications Center;

c. The jurisdictional Communication Center and the Metropolitan regional Police, Fire, EMS and Hospital Resources that may need to be mobilized in response to a disaster.

2. Assumptions:

1. Communication must be viewed from the aspects of both equipment and procedure.

2. Events of January 13, 1982 revealed minor deficits in communication equipment and major deficits in communication procedures for regional disaster response.

3. Communications at the time of disaster should be as near an extension of day-to-day operations as possible.

3. Recommendations:

a. General

1). All communications should be made in plain language.

2). In the event of a disaster, jurisdictions must refrain from using PMARS, FMARS and Channel 1 EMS communications channels, so that the jurisdiction afflicted with the disaster can utilize these Mutual Aid Frequencies to inform the region and mobilize the appropriate responses.

3). All jurisdictions must review the communications section of their disaster plans and update them in line with these recommendations.

4). Base to base communications should not tie up Mutual Aid frequencies.

b. Equipment

1). Direct telephone lines should be installed between Fire Communications Centers of jurisdications having common boundaries. (These do not currently exist in many instances particularly across the Potomac River)

2). The METRO underground communication capability for Police, Fire, and Emergency Medical Services must be promptly implemented.

3). Place certain Maryland and Virginia jurisdictions utilizing FMARS (154.280) for interjurisdictional incident communication on another channel e.g. 154.295, thus freeing FMARS for Metropolitan Mutual Aid responses.

4). All Communication Centers, land, water and air responding units should be equipped with Mutual Aid Communication capabilities, including mobile and portable radios.

5). Upgrading of PMARS and FMARS Equipment

A technical study should be undertaken to insure that PMARS and FMARS equipment is state-of-the-art.

6). Upgrading of MARNIS Equipment

The MARNIS system should be evaluated for potential expansion. This evaluation should be in concert with the technical study of PMARS and FMARS.

7). Each major jurisdiction in the area must ensure availability of a mobile command vehicle with communication capabilities. Common regional specification shall be developed through the Council of Governments.

c. Communications Procedures and Protocols

1). A specific protocol must be established by all fire, police, and EMS communications personnel to insure appropriate use of Mutual Aid Frequencies in the event of a disaster.

2). A Mobile Communications Center, under control of the Incident Commander, should use the Mutual Aid Frequencies to communicate with responding agencies, institutions and vehicles.

3). Responders to a disaster should only use the Mutual Aid Channels when requested to respond to the Incident Commander.

4). The Incident Commander can utilize the channel to provide continuous update, needs of the scene, and identification of the extent and nature of the disaster.

5). At the initiation of a disaster, two long-alert tones should be given over the Mutual Aid Communications Channels, followed by a specific disaster call and a request to keep the channels free. This should be an indication to all regional agencies to use other radio channels or telephones for intrajurisdictional or non-disaster communications.

6). A routine check of this communication procedure should be done on weekly, rotating basis by jurisdictional Communications Centers.

Hospital Communications

a. Northern Virginia, Maryland and the District of Columbia must each study methods that will facilitate interhospital communications in a manner that does not impede the general disaster response.

b. Each sub-region should devise a mechanism by which a hospital facility identifies the regional hospital resources in the event of the disaster, and can communicate these resources to the disaster command on request.

Regional Hospital Response

1. Objective

   To insure timely and appropriate medical care for those injured or ill as a result of a disaster.

2. Assumptions:

   - Extensive medical and hospital resources exist within the Metropolitan region to treat virtually all types and severities of disaster victims.

   - Communication with and between the hospitals is essential to provide smooth integration of these resources into the needs of the disaster response.

   - Physicians are only needed at the site of a disaster in the event of delay in victim evacuation or entrapment.

   - All hospitals are capable of taking care of some injured victims, but the Trauma Centers designated by the three States in the Metropolitan area are best equipped to deal with severely injured victims.

3. Recommendations:

   a. Regional hospitals should communicate on a separate dedicated and redundant network.

   b. The hospital in the jurisdiction of the disaster that would normally be providing medical control for prehospital care on that day, will ensure that one physician is dispatched to the site of the disaster. This physician need not necessarily come from that hospital, but should be familiar with the regional operational protocols, triage and emergency treatment procedures. This individual shall be called the "Command Physician" and shall have authority over any additional arriving physicians or physician teams and shall report to the Incident Commander to coordinate with the overall management of the disaster.

c. When additional physicians are required to join the triage and treatment teams at the disaster site they should be mobilized from the Trauma Centers outside the jurisdiction immediately affected by the disaster.

d. Trauma Centers in the region must maintain the capability to provide one physician to a disaster scene at all times. This physician must be experienced in emergency medical procedures and triage and shall receive familiarization training in command post operations.

e. Trauma Centers throughout the region must maintain the capability of rapidly mobilizing supplies which can be used at a disaster site.

f. The Council of Governments EMS Policy Committee should establish the nature and type of this uniformed resupply of the disaster site.

g. One hospital or agency of Northern Virginia, Maryland, and the District of Columbia should act as a resource for coordinating hospitals in the event of a disaster by obtaining information on critical care beds, physician and bed availability from the other hospitals in that sub-region and providing this information to the Communication Center in the jurisdiction in which the disaster is located.

h. There should be a redundant dedicated communications systems between the Hospital/Agency serving as resource coordinator in each sub-region, so that linkage of hospital resources can be established regionally.

i. The hospitals in each sub-region must insure that the military hospital resources are linked into the disaster response.

V. Fiscal Considerations

1. Objectives
Consider the fiscal implications of the regional emergency response recommendations in the context of collective regional priorities, timing and source of funding.

2. Assumptions:

- Some recommended improvements can be accomplished at minimal cost through the COG mechanism

- Some recommended improvements can be funded by individual local governments.

- Some recommended improvements require collective local funding

- Some recommended improvements require federal, state or other funding beyond the scope of local governments

3. Recommendations:

a. The recommendations of this report all have fiscal implications ranging from increased time commitments by public safety professionals for improvements in coordinated procedures, to major initial and long term costs associated with the purchase of additional emergency helicopters in the region.

b. It is not possible at this time to specifically detail the costs of each recommendation, particularly in terms of source of funding. General areas of fiscal considerations include:

1. Funding for Metropolitan Planning and Coordination Staff, to address regional recommendations, including:
    - Regional emergency management plan development;
    - Development of specific procedures as identified in the Task Force recommendations;
    - Coordination of regional disaster drills
2. Funding for implementation of specified studies.
3. Funding for purchase of identified equipment.
4. Funding for regional training and drills.

c. It is strongly recommended that financial resource needs and potential funding sources be identified through the region's partnership of local, state, federal and private officials to implement the recommendations of the Task Force.

APPENDICES

1. LIST OF COMMITTEES AND INFORMATION SOURCES
2. SURVEY OF SPECIALIZED EMS PRE-HOSPITAL RESOURCES
3. HELICOPTER CAPABILITIES DESCRIPTION

APPENDIX 1: LIST OF COMMITTEES

PUBLIC SAFETY POLICY COMMITTEE

- Police Chiefs Steering Committee

  Police Communications Officers Subcommittee
- Fire Chiefs Technical Committee

  Fire Communications Officers Subcommittee
  Emergency Medical/Rescue Service Officers Subcommittee
- Disaster and Emergency Preparedness Technical Committee

EMERGENCY MEDICAL SERVICES POLICY COMMITTEE

Ad Hoc Committees on:

- On-Site Command and Control
- Resource Deployment Under Mutual Aid
- Inter-hospital Communication and Coordination
- Air Command and Control; and
- The EMS Communications Subcommittee (a standing subcommittee of the EMSPC)

SPECIAL TASK FORCE ON EMERGENCY RESPONSE, Metropolitan Police Department

- Legal Issues Committee
- Emergency Plans Committee
- Police Jurisdiction/Response/Mutual Aid Committee
- Hospital Emergency Plans & Agreements Committee
- Fire Jurisdiction/Response Mutual Aid Committee
- Logistics/Accessibility of Equipment Committee
- Command Post Operations Committee
- Federal Response/Resources Committee
- Citizen's Perception/Press Relations Committee
- Emergency Communications System Committee
- METRO Emergencies Committee
- Post Disaster Evaluation System Committee

APPENDIX 2:

SURVEY OF SPECIALIZED EMS PRE-HOSPITAL RESOURCES

- Prepared by the Ad Hoc Subcommittee on Resource Deployment Under Mutual Aid of the Emergency Medical Services Policy Committee.

VEHICLES AND EQUIPMENT FOR REGIONAL DISASTER UTILIZATION (P. 1)

	BLS		ALS		# OF SQUADS AND EQUIPMENT CARRIED									
	IN SERVICE	SPARE	IN SERVICE	SPARE	NUMBER OF IN SERVICE SQUADS	AIR BAGS	HYDRAULIC EXTRICATION EQUIPMENT	RAILROAD JACKS	SHORING EQUIPMENT	LARGE CUTTING TORCHES	TUNNELING EQUIPMENT	SPECIAL ENVIRONMENT PROTECTION SUITS	CHEMICAL/RADIATION HAZARD MONITORING DEVICES	OTHER
ALEXANDRIA FIRE DEPARTMENT	All vehicles BLS/ALS Combination		3	2										
ARLINGTON COUNTY			4	2										
DISTRICT OF COLUMBIA	12	6	4	4	4 1 spare	H-4	H-4		H-4	H-4	H-4		H-4	
FAIRFAX COUNTY FIRE & RESCUE SERVICE	31	5	9	1	7 1 spare (H)	H-4 SH-1	H-6G H-5E SH-1G SH-2E	H-7 SH-1	H-5 SH-1	H-6		H-1	H-7 SH-1	
LOUDOUN COUNTY FIRE & RESCUE SERVICE	5		10		7*		5**	H-2						
MONTGOMERY COUNTY FIRE & RESCUE SERVICE	36	1	8		10	H-5	H-12G H- 3E	H-10	H-11	H-8		4 on Haz Matl VAN	H-7	
PRINCE GEORGE'S COUNTY FIRE DEPT.	41	14	4	2	11		H- 9 L- 2	H-9 L-2	H-9	H-9		3 on Spec. Haz.Van	H-4	
PRINCE WILLIAM COUNTY FIRE/ RESCUE SERVICE	31		7	3	H-5 1-L	4	H-5 L-1 Engine 5	H-4	H-3	H-5				
FAIRFAX CITY FIRE & RESCUE	1		1	1		2 Sets	26	1 - On Tower	H - 1			1 Set On Foam Unit	Explosion Meter & Radiation Unit in B/C Car	

KEY: H= Heavy Squad
L= Light Squad

SH= Spare Heavy Squad
SL= Spare Light Squad

G= Gas
E= Electric

* listed 7 and 2 heavy and 1 light
** no specification of units

VEHICLES AND EQUIPMENT FOR REGIONAL DISASTER UTILIZATION (P. II)

	# OF LIGHT UNITS	# OF AIR UNITS	OTHER SPECIALIZED RESCUE UNITS	CONSTRUCTION TYPE EQUIPMENT AVAILABLE IMMEDIATELY	DIVING CAPABILITY			# OF PORTABLE GENERATORS	# OF PORTABLE PUMPS	MEDICAL SOCIETY SPECIAL DISASTER UNIT	OTHER EQUIPMENT FOR DISASTER SITUATIONS	# OF BOATS AVAILABLE
					ORGANIZED SQUAD	UNIT	DIVERS					
ALEXANDRIA FIRE DEPARTMENT	▨	1	NONE	NO	NO	NO	▨	16	▨	▨	▨	▨
ARLINGTON COUNTY	▨	▨	NONE	YES 8:00 am to 5:00 pm	NO	NO	▨	3	1	▨	▨	▨
DISTRICT OF COLUMBIA	1	1	1 Foam Truck 2 T.A.U. with Proximity Suits 1 Salvage	1 Air Compressor	NO	NO	▨	30	10	▨	▨	6 Small 2 Fire Boats
FAIRFAX COUNTY FIRE & RESCUE SERVICE	3	9	NONE	YES	YES	YES	38	18	27	YES-basic disaster kit in trailer	▨	12
LOUDOUN COUNTY FIRE & RESCUE SERVICE	▨	8 1 Cascade	NONE	YES--Privately Owned	NO	NO	4	5	14	▨	▨	3
MONTGOMERY COUNTY FIRE & RESCUE SERVICE	▨	12	1-Hazardous Matl. Response Team 1-Training & Disaster Unit	Wide Range Through Municipality	YES	YES	6	22	35	▨	▨	7
PRINCE GEORGE'S COUNTY FIRE DEPT.	2	2	2 Cave In Units "D"	NO	YES	YES	15	27	31	▨	▨	8
PRINCE WILLIAM COUNTY FIRE/RESCUE SERVICE	1*	1*	NONE	YES	NO	NO	▨	29	5	YES-150 bed pack Hosp.	▨	5
FAIRFAX CITY FIRE & RESCUE SERVICES	D	1 Cascade On Tower	1 Foam Unit 1 Foam Tender	None City Owned	NO	NO	▨	1	1	▨	Austin Oxygen Manifold (after 7/1/82)	▨

* Combination

PERSONNEL AND COMMUNICATIONS EQUIPMENT CAPABILITY

	PERSONNEL			COMMUNICATIONS					
	# of EMT's	# of CCT/CRT's	# of EMT-P's	ALL UNITS EQUIPPED WITH NOVAL OR METRO RADIOS	# OF EACH TYPE UNIT EQUIPPED WITH NOVA(N) OR METRO(M) RADIO	# of FIRE CHANNELS AVAILABLE	# of MED CHANNELS AVAILABLE	SPECIAL COMMAND OR COMMUNICATIONS UNIT AND TYPE OF EQUIPMENT	
ALEXANDRIA FIRE DEPARTMENT	200	28		YES	All Have Both	2	4	YES	Metro Radio, Nova Radio, Fire Freq., Mobile Telephone, Telephone Hook-Up Prewiring
ARLINGTON COUNTY	240	12	8	YES	All squads, engines & truck comp. Salvage wagon	2	8	NO	
DISTRICT OF COLUMBIA	700	35	25	YES	No Answer	4 fire 1 amb.	8	NO	
FAIRFAX COUNTY FIRE & RESCUE SERVICE	750 138-Vol.	74 21-Vol.	1 1-Vol.	YES	BLS - 36N ALS - 10N Heavy Squad-8N 3M&N	3	6	YES	Fairfax County Police, Metro, Nova and Med radio
LOUDOUN COUNTY * FIRE & RESCUE SERVICE	165	29	2	NO	Nova - 1 Metro - 9	3	4	YES	Metro Radio, Fire Freq., Sheriff Dept. Telephone Hook-Up Prewiring and CB
MONTGOMERY COUNTY FIRE & RESCUE SERVICE	1,200	113		Nova -NO Metro-YES	All Units Metro	3	5	YES	All Freq. in Area and Mobile telephones
PRINCE GEORGE'S COUNTY FIRE DEPT.	1,100	50		Nova -NO Metro-YES	37 Metro	7	4	YES	Metro, Local CB, Fire Freq., Mobile Phone, County Policy Channel, Shared Local Govt. Channel & Amateur Radio
PRINCE WILLIAM COUNTY FIRE/ RESCUE SERVICE	400	116	2	NO	40	3	8	NO	
FAIRFAX CITY FIRE & RESCUE SERVICES	30 Career 25 Vol.	10 Career 5 Vol.	1	YES	1 Rescue, 1 Medic 1 Reserve Medic 3 Engine Cos., Tower, Foam unit, & Tender	3	4	NO	

* 1 - IV Tech

25 - Shock/Trauma

APPENDIX 3: Helicopter Capability Description

The need for prompt and effective helicopter support during disasters or other emergencies is almost self evident. Certainly the Air Florida crash provided renewed and dramatic emphasis to that need. The events of January 13th demonstrated even more that available helicopter in the metropolitan area are too few in number and are not sufficiently versatile to perform adequately across the broad range of demands that may be placed upon them on that day.

The following capabilities for helicopters should be considered emergencies in assessing responsiveness for disasters and others

- lift capability for two or more persons simultaneously without landing.
- capability of landing on water.
- fire suppression capability. This should be incorporated with rescue lift capability so that victims could be removed from burning wreckage.
- adverse weather flying capability.

It is not enough to have one or two helicopters with multiple-capability features in an area as complex and diverse as metropolitan D.C. and environs. Our potential for large-scale disasters or lesser ones occurring simultaneously is manifestly clear from events of January 13th.

There was no immediate response by a multiple capability helicopter to the Air Florida crash. The first one to respond and accomplish the dramatic water rescue of five survivors was not specifically equipped for such operations. There are no plans to equip it in such a fashion in the future. Other than routine passenger carrying and observer activities, only two locally based, state owned, non-military helicopters are equipped with emergency medical service (EMS) transport capabilities. Both of these helicopters are responsive first to their respective state governments and secondarily to local needs.

A military helicopter, stationed at Davison Army Airfield (Fort Belvoir, Virginia) has multiple capabilities similar to those described above; however, it is not available for immediate dispatch 24-hours-a-day. Moreover, it is not available primarily for local civilian needs.

The disasters of January 13th, were of course, primarily in the context of rescue and salvage (or recovery) operations. It should be noted, however, that emergencies may also occur in the context of police operations or a combination of fire, rescue and police. Helicopters, of the type described, are of inestimable value in certain traffic, fugitive, hostage, robbery, sniper and terrorist situations - to name a few. Local or regional control of resources would extend their use in these situations as well. Joint, fire/rescue and police, support needs would thus be met.

In summary, the metropolitan area is simply too large, diverse and potentially disaster prone to forego any longer the availability of several advanced, helicopters that could respond under local or regional authority and control to the scene of emergencies. The expense of acquiring and maintaining such machines is unquestionably high. If costs are severely prohibitive, then a formula could be developed for regional ownership and control. At a minimum, there is a clear and convincing need for three units described herein; one in the District, one in Northern Virginia, and one in Southern Maryland (PG and Montgomery Counties).

Senator MATHIAS. Panel number two consists of: Maj. Thomas McDonald, chief of the Field Service Bureau of the Montgomery County Police; Richard Durgin, director of Public Works and Emergency Preparedness, city of Falls Church; Mr. Hal Silver, chief of Emergency Preparedness of Prince Georges County; the Honorable John F. Herrity, chairman of the Board of Supervisors of Fairfax County; John Milliken, member of the Arlington County Board; Charles H. Rule, fire chief of Alexandria; the Honorable John W. Russell, mayor of the city of Fairfax; the Honorable Joseph P. Yeldell, acting director of the Office of Emergency Preparedness of the District of Columbia.

Mr. Herrity, I understand that you have a time problem.

Mr. HERRITY. Yes, sir.

Senator MATHIAS. I am going to ask the rest of the panel to let me call upon you first.

Also, because of the size and distinction of this panel, I am a little concerned that we get through, and so I think there has been a preliminary agreement that all prepared statements will appear in full in the record and that members will try to reduce their comments to several minutes each.

So that everybody is treated fairly, I am going to ask our clerk to give you a warning when the agreed time has expired.

Mr. Herrity, you are on. After your statement, we will proceed with the rest of the panel.

TESTIMONY OF JOHN F. HERRITY, CHAIRMAN, BOARD OF SUPERVISORS, FAIRFAX COUNTY, VA; MAJ. THOMAS A. McDONALD, CHIEF OF FIELD SERVICE BUREAU, MONTGOMERY COUNTY POLICE, MD; RICHARD DURGIN, DIRECTOR OF PUBLIC WORKS AND EMERGENCY PREPAREDNESS, FALLS CHURCH, VA; ROBERT HAL SILVERS, DIRECTOR, OFFICE OF EMERGENCY PREPAREDNESS, PRINCE GEORGES COUNTY, MD; JOHN G. MILLIKEN, VICE CHAIRMAN, ARLINGTON COUNTY BOARD; CHARLES H. RULE, FIRE CHIEF, ALEXANDRIA, VA; JOHN W. RUSSELL, MAYOR, FAIRFAX, VA; AND JOSEPH P. YELDELL, DIRECTOR-DESIGNATE, OFFICE OF EMERGENCY PREPAREDNESS, DISTRICT OF COLUMBIA

Mr. HERRITY. Mr. Chairman, I appreciate your kindness.

I am John F. Herrity, chairman of the Fairfax County Board of Supervisors. I am pleased to have this opportunity to speak on behalf of Fairfax County regarding emergency preparedness in the Washington metropolitan area.

Fairfax County is committed to the concept of emergency planning on a regional basis, as evidenced by our participation in solutions to potential area-wide problems such as disruption of public transportation services, as well as water, natural gas or other shortages.

The approval in principle of the COG recommendations by the Fairfax County Board of Supervisors in July 1982 demonstrates that Fairfax County believes that there is a need for coordination of metropolitan emergency response capabilities and that we support the efforts of the Council of Governments to meet this need.

One of the major problems which will need to be resolved in the near future, however, is the need for additional funding, as outlined in the COG plan.

Fairfax County is currently in the process of revising both the content and the format of its disaster plan. This effort is not a direct result of the air crash of January 13, 1982, although the tragic events of that day have had an impact on planning for future emergency services. To ensure compatibility with other area jurisdictions, many of the COG recommendations have been incorporated into the first draft of our disaster plan.

The county is also in the process of developing a master resource manual, which will cite all resources that might be needed during a disaster, where they might be obtained, and any special considerations for use. A copy of the table of contents of this manual has been submitted to the General Accounting Office in response to their survey of area jurisdictions.

Fairfax County is prepared to respond to any emergency, regardless of cause, which would require rescue operations, traffic control, fire suppression, protection of life and property, and maintenance of law and order.

Fairfax County is committed to doing its part toward regional emergency response and will continue to give support toward this effort.

I appreciate this opportunity to present some of Fairfax County's accomplishments to this subcommittee and look forward to working with metropolitan area jurisdictions, through COG, to produce a regional response plan.

Senator MATHIAS. I am going to hold questions for the panel until everyone has testified, but since Mr. Herrity may be leaving us, let me ask him this one brief question and ask him to give us a brief answer.

Mr. HERRITY. Sure.

Senator MATHIAS. At what point in the progress of an emergency is outside help, regional cooperation, sought by local officials? How do you determine that an emergency is of a magnitude to require interjurisdictional cooperation?

Mr. HERRITY. In my personal view?

Senator MATHIAS. Your personal view.

Mr. HERRITY. In my personal view, when another jurisdiction calls on Fairfax County for assistance in any particular situation, I believe we have some obligation to respond, and I believe this is the basis of the mutual aid agreements——

Senator MATHIAS. But in Fairfax County, when the balloon goes up and either the police or the firemen say that this thing is bigger than they can handle, what is that point? How do you determine that you have reached that stage?

Mr. HERRITY. Well, it is the size and the number of resources that have to be brought to bear. For instance, on numerous occasions we have worked with Fort Belvoir. During Hurricane Agnes, we had a water shortage as a result of the breach of the lower Occoquan Dam. We had water trucks from Fort Belvoir stationed at schools and that type of thing.

As a matter of fact, you were mentioning the relationship between Federal, local and regional government entities. We are currently working and negotiating with Fort Belvoir, on an inventory and an emergency response plan that will be much more sophisticated and readily activated than the process that has existed in the past.

Senator MATHIAS. Covering all kinds of emergencies?

Mr. HERRITY. Covering all kinds of emergencies.

So I think, in response to some of the questions you were asking earlier about Federal and local involvement, it would be my suggestion that each jurisdiction work with the Federal installation within its confines, to inventory the assets that are available from that particular Federal operation, and to develop a reasonable relationship between resources available and the type of responses necessary under a particular set of circumstances.

In this way, once you contact one of the local governments in a region for a response, that immediately incorporates the reserves and resources of the Federal agencies or establishments within the confines of that particular locality. This may be one way to relate the Federal establishment and its resources to a regional emergency response effort.

We are in the process of doing this with the primary Federal resource that is located within the borders of Fairfax County, which is Fort Belvoir. We have used the resources of Fort Belvoir in the past, and I think we will have a more sophisticated way of using them in the future.

Senator MATHIAS. Thank you very much.

Let me return to the regular order here.

Major McDonald? Let's just go right down the witness list here.

Mr. McDONALD. Mr. Chairman, my name is Maj. Tom McDonald, Montgomery County Department of Police. I am in charge of our field services bureau as well as our department's emergency response team.

I am pleased to have this opportunity to testify before the subcommittee concerning emergency preparedness in the metropolitan area.

Over the past 4 years, Montgomery County has invested substantial effort in emergency preparedness at both policy management and operational levels. This effort is directed by an emergency management group, chaired by the chief administrative officer, and including directors of the major departments in county government that would normally be involved in emergencies.

The Emergency Management Group meets monthly, reviews the implementation of a countywide emergency preparedness work program, conducts evaluations of major emergency incidents, and undertakes training and simulation exercises. We are proud of the effort thus far and believe it lays a foundation for coordinated and effective response to various disasters.

At the outset, of course, police and fire departments are the first responders. As the first step toward mutual understanding and cooperation, the police department as well as fire/rescue services have written directives that govern our day-to-day emergency operations.

As the emergencies grow in magnitude, the rapport, efficiency, and cooperation of this day-to-day operating policy continues to influence the mutual response and coordination between the agencies.

The police department has a written directive system that deals with public emergency operation plans and civil disturbance plans. It spells out supervisor, manager, and even the chief's role in each of these kinds of events. The fire department has similar policies.

When an emergency of extreme magnitude occurs, the initial response is governed by the day-to-day operating policies of police and fire/rescue services. Once the magnitude of the incident is determined to even get greater, the disaster notification system is quickly alerted. Included in this are the specific individuals and department heads that should be contacted to respond and be the managers and decisionmakers in these kinds of emergencies.

Montgomery County, also, like the other jurisdictions, is involved with COG, and there is a mechanism for providing and requesting additional assistance.

One final point that I would like to make is this. You talked earlier about what the Federal Government can do. I have noted here that it offers a source of aid to local jurisdictions. For instance, it offers a tremendous resource of manpower, expertise, and equipment—heavy-grade construction equipment, emergency bridge-building equipment, medical supplies, vehicles, helicopters, are just some examples.

My only comment to an earlier question you had was that requesting this kind of equipment can be done through FEMA, but it needs to be streamlined into something less than an act of Congress to get that equipment when it is needed.

Again, I thank you for this opportunity to be here and testify. Montgomery County will assist you and this committee in any way we are capable of doing.

Thank you.

Senator MATHIAS. Thank you very much, Major.

Mr. Durgin?

Mr. DURGIN. The city of Falls Church has the following comments relative to the questions posed in Senator Mathias' February 15, 1983, letter relating to emergency preparedness in the Washington metropolitan area:

Falls Church's Public Safety Committee and Disaster and Emergency Preparedness Committee, along with the Metropolitan Washington Council of Governments, are studying the recommendations prepared by COG in their June 1982 report. Many agencies have strengthened their emergency plans; however, improvements by the metropolitan jurisdictions must be made and coordinated with each other. This can only be accomplished through COG. The June 1982 COG report is consistent with what is needed to be implemented in the planning and updating process.

Other jurisdictions have copies of the city's plans. However, this plan is presently being revised and updated to conform to today's different types of emergencies. As much as possible, the city of Falls Church's updated plan will be made compatible with the surrounding jurisdictions. Mutual aid agreements presently exist with other jurisdictions through the efforts of COG.

The city of Falls Church is prepared to respond to all emergencies. However, due to its small size, assistance from surrounding jurisdictions, nonprofit organizations, State, and/or the Federal Government may be needed.

Surrounding jurisdictions' emergency plans must be coordinated and made compatible with each other. These plans must be field-tested to resolve deficiencies so that they will not exist during actual emergencies.

In order to accomplish the above, the Council of Governments must be designated the responsible agency to accomplish this task. In the past, COG had the capability of performing this task with personnel staffing the Disaster and Emergency Preparedness Subcommittee. However, in the fall of 1981, the Federal Emergency Management Agency discontinued its funding to COG, which has been a serious blow to all jurisdictions which make up the Metropolitan Washington Council of Governments.

It is therefore recommended that the Federal Government provide the desperately needed funds to the Metropolitan Washington Council of Governments, who will, in turn, oversee the regional planning, coordination, testing, and updating of the surrounding jurisdictions' emergency plans.

I want to thank you for allowing the city of Falls Church this opportunity to address the committee at this time.

Thank you.

Senator MATHIAS. The message was loud and clear.

Chief Silvers?

Mr. SILVERS. Mr. Chairman, my name is Robert Hal Silvers, and I have served continuously since June 3, 1955, as the director of the Office of Emergency Preparedness for Prince Georges County, MD.

The Honorable Parris Glendening, chief executive for Prince Georges County, has asked me to testify on his behalf.

We have described, if you will, in some eight or nine pages, the demographics of our county. We are a highly urbanized community covering some 496-plus square miles. The population is 675,000.

In the public safety organization, the government organization of Prince Georges County is such that it can be readily adapted to supply the direction and control necessary to maximize the preservation of life and property and provide for the general welfare of victims in the event of an emergency or disaster. We have had a number of experiences in Prince Georges County over the years.

County emergency operations, in the absence of a State declaration or a Presidentially declared emergency or major disaster, direction and control will come under the aegis, of course, of the county executive and/or the chief administrative officer. In the absence or inability of the county executive or the chief administrative officer, they have the prerogative of delegating or designating another official. Ofttimes they designate, and they have in the past, the director of the Office of Emergency Preparedness.

We have, I believe, a fairly sophisticated emergency operating center, the key to command and control. Prince Georges County's emergency operating center is fairly new. It is now located in Capitol Heights, MD, in a renovated school building.

It provides a secure and protected headquarters and communications center, and a highly sophisticated communications center used daily for the direction and control of all emergency and disaster operations within the county. We can communicate with several other jurisdictions as well by land-line or radio.

The emergency operating center is in operation at all times, on an around-the-clock basis, 7 days a week, with staff varying, based on the circumstances.

We have, if you will, an emergency call-up system. Should an emergency occur, no matter what the emergency, we use a simplified call-up system: condition green, meaning an emergency or disaster may affect the community, and key personnel, police department, fire department, various disaster representatives, will go on a standby; condition yellow, meaning the emergency or disaster is imminent, and each disaster control representative—designated by the several department heads throughout Prince Georges County—report to the emergency operating center; condition red, meaning that the emergency has reached us and, of course, disaster control representatives from public safety components should be stationed at the EOC.

Now, about mutual aid agreements. The fire department has had mutual aid agreements for years with all other jurisdictions. To illustrate, I heard the chairman mention earlier the problem with the past civil disturbance in the District of Columbia. Prince Georges County fire departments responded pursuant to the District of Columbia's request. This is standard operating procedure. We did not preempt our entire fire forces, but we sent them into the stricken community.

We are involved in hazard mitigation—an important part of our function. During flooding, we had experience with Hurricane Hazel in 1954, tropical storm Agnes in 1972. These were Presidentially declared disasters where all forces—Federal, State, and local—were brought to bear, proof positive of a Federal, State, and local government partnership.

We had SBA come in to provide loans to our constituents who needed financial assistance and aid.

We also have, under hazard mitigation, fires that occur throughout the county. We are a highly developed and urbanized community, and there are inevitable fires in our given densely populated community. We have a very sophisticated fire service in Prince Georges County, MD.

With regard to snow and ice, we recently experienced a dilemma with a snow and ice problem. Well, I think we solved the elements with professional skill.

We have had high-rise disasters as well. I think we are fairly public safety competent, Mr. Chairman, in that field.

When it comes to necessities or requiring additional resources to come to bear, we have a State organization, and the State is responsive to local governments, based on the requests and the need, with all available resources. If we require assistance from Andrews Air Force Base, as an illustration, or Fort Meade, in almost 30 years of service, we have yet to be denied funds or assistance from a Federal installation, or staff, be it a snowstorm or be it any disaster or emergency that may strike.

I would be glad to answer any questions you may have, Mr. Chairman.

Senator MATHIAS. I will hold questions because I think we are in condition red on that one. [Laughter.]

Mr. Milliken?

Mr. MILLIKEN. I am John Milliken, vice chairman of the Arlington County Board.

The Arlington County government, through its police and fire chiefs, has been directly involved in the development of the recommendations to strengthen the emergency response capabilities in the region.

Last November 26 Arlington officials participated in a program sponsored by the Federal Emergency Management Agency [FEMA] which presented to local officials a model for the development of a comprehensive emergency management plan.

Arlington is now revising its existing emergency management plan in keeping with that model.

During the FEMA program, county officials were exposed to various hypothetical disasters—a major gasoline leak, fires in high-rise buildings, collapse of buildings, and hazardous materials incidents in the Potomac railroad yards. These multiple incidents and Arlington's reaction to them led the Emergency Management Institute of FEMA to conclude that Arlington could cope with most disastrous events.

But Arlington learned some valuable lessons from this experience. First, we saw a need to upgrade our plan, which we are now doing. Second, we realized that all agencies of local government must participate in disaster management planning. Third, we realized that Arlington could not stand alone.

The revision of Arlington's plan will include many of the recommendations covered by the Council of Governments' report of June 1982.

Arlington County currently has various police and fire mutual aid agreements with surrounding jurisdictions. Efforts are under way to conclude additional emergency medical protocols to allow paramedics to treat victims regardless of the political jurisdiction involved.

Arlington's comprehensive emergency management plan will reflect, we think, regional requirements. The inclusion of a standard command and control system will be the cornerstone of that upgraded emergency management plan.

As is stated in the Council of Governments' June report, an assumption must be made that the local jurisdiction has control of the incident unless a previous agreement is enforced. There is very little operational difference between the police, fire, and public works authorities in the various jurisdictions, and they work well together in a disaster.

It is Arlington's understanding that the Federal Emergency Management Administration will be the coordinator of Federal activities at a disaster scene. This Federal focal point is necessary because of the various roles and responsibilities of different Federal agencies.

In the metropolitan area, no one individual jurisdiction can function in isolation. Today all jurisdictions, including Arlington, are working in a cooperative manner to anticipate problems and plan their resolution.

We appreciate the opportunity to give you our thoughts on this and would be pleased to work further with you if that is your wish.

Senator MATHIAS. Thank you very much, Mr. Milliken.

Chief Rule?

Mr. RULE. Mr. Chairman, my name is Charles Rule, fire chief in the city of Alexandria. Our mayor, Mayor Beatley, has submitted a written document to you and has designated me to represent him today.

Very quickly, we support the COG effort as a facilitator for the upgrading of mutual aid plans and a regional document. We believe there is a need for a regional incident command system for the metropolitan area.

There is a public domain document, the National Interagency Incident Management System, developed by the U.S. Forestry Department, that could serve as a model, and we could overlay that with modification to the metropolitan area. We are concerned in the metropolitan area about a hazardous materials incident which might better be served on a regional basis.

Also, we would like to have the role of the Federal Government identified prior to an incident and after an incident. The reactive and proactive authority and jurisdiction, and a focal point, would be of help to the local government officials, if we knew whom to go to, having one central focal point representing the Federal Government for all agencies, prior to and after a disaster.

Senator MATHIAS. Thank you very much, chief.

Mr. RULE. Thank you, sir.

Senator MATHIAS. Mayor Russell?

Mr. RUSSELL. Mr. Chairman, my name is John W. Russell, mayor of Fairfax City. Sergeant Kennedy of our police department is our chief coordinator, and he is with me at the table.

Our relatively small city is located in the center of Fairfax County, about 16 miles west of Washington, DC. It has a little over 20,000 residents. As a local government center, however, our workday population is considerably larger than our nighttime population.

Senator MATHIAS. You have more people that commute in than commute out.

Mr. RUSSELL. Yes, somewhat like the District of Columbia.

Fairfax City completed, with State assistance, its emergency operation plan in July 1981, and it is on file in the Virginia State Office of Emergency Services.

We have found our operations to be effective and efficient in a couple of natural disasters, such as two tornadoes ripping through our city. Also, we have had one major emergency, man made, that is, in 1981 when a tank farm spilled some 300,000 gallons of gasoline in the area, and we evacuated over 400 residents to a high school and returned them without incident, without injury, and without damage.

Our city's present emergency plan, we believe, is basically compatible with that being developed by the Metropolitan Council of Governments. We have already signed police and fire mutual aid agreements, a regional fire protection plan, and a mutual operation procedure with our neighboring jurisdictions.

Our city has only limited resources, and we would have difficulty in responding to a disaster such as the one in the Air Florida crash.

We believe that two major problems must be resolved to obtain a regional efficiency, and that is, one, to upgrade the interjurisdictional communications equipment; and, two, to establish and approve regional command and control procedures and standards that we all could live by and operate by.

In conclusion, our city is aware of the necessity for cooperation and coordination, and we have cooperated in the past, and we will continue to cooperate in the future.

I thank you for your attention and the privilege of testifying here today. Thank you very much.

Senator MATHIAS. Thank you, Mayor Russell.

Now, finally, Mr. Yeldell.

Mr. YELDELL. Mr. Chairman, my name is Joseph Yeldell. I am the director-designate of the Office of Emergency Preparedness.

I am pleased to be here on behalf of Mayor Barry. Also accompanying me here is our police chief, Maurice Turner, and the Assistant Fire Chief Shaeffer.

I just want to say very briefly, Mr. Chairman, that in regard to the regional effort of emergency planning, the District plans to work in cooperation with the council of governments in every way possible.

As it relates to local emergency planning, the mayor has designated the Office of Emergency Preparedness as the coordinating agency for all emergencies. As such, we work with all public safety agencies in that respect.

I would say that following the disasters of January 13, 1982, the Mayor asked the chief of police to empanel a special group. They looked at those disasters in great detail. The District is using the results of that investigation as a basis for establishing its emergency planning for the future.

We would be pleased to work with you in regard to all concerns in emergency planning.

Of course, I would be pleased to answer any questions you might have.

Senator MATHIAS. Thank you very much.

Let me ask the panel at large a couple of general questions and then go to some individuals.

How useful is FEMA emergency assistance? To put it bluntly, is there so much redtape involved with FEMA that it becomes a problem to deal with them, or not? I am not suggesting there is; I just want to know. Is FEMA useful?

Major, you look like you could answer that.

Mr. MCDONALD. From what was said by the gentleman on my left, it appears that they are quite helpful in developing plans for various types of emergencies. I know that their representatives have attended a number of our emergency management group meetings in Montgomery County. But I have not personally had to call upon them for any kind of Federal resources.

I think the first level of requesting this kind of assistance is through the Governor and the National Guard, and then, of course, on to the Federal level. But, depending on the type of emergency, there are certain old acts, as you know. I think one is Pace Comitatus or something similar to that. It sets out very, very rigid guidelines for Federal assistance to law enforcement. I am talking about military assistance.

Senator MATHIAS. Would anyone else like to comment on that?

Mr. YELDELL. Well, Mr. Chairman, I think that there are two roles here. FEMA, as a standing partner in emergency preparedness, is extremely effective. I think that the relationships are extremely good.

I don't know that there has been an occasion where the District has had to invoke the Federal disaster assistance structure, and I guess that is where the basic red tape would come. But in terms of structuring an emergency plan and in terms of working with the city, functioning as a State in this regard, I think we have found that FEMA has been an exceptionally good partner.

Senator MATHIAS. And they have not required you to address areas of planning that you think are unnecessary?

Mr. YELDELL. No. I think that they are quite apropros.

I would also say, Mr. Chairman, that FEMA is moving into a period of integrated emergency planning. It probably will not go into full effect until fiscal year 1984, but I think that that stroke alone will aid the jurisdictions immeasurably in this regard.

Senator MATHIAS. Let me ask the panel again, the whole panel, but with a word of caution—I cannot give you anything. [Laughter.]

I have nothing to give away, and I do not want you to imply from my next question that I am in a position to give anything away, because I am not. But what resources do you think are needed from the Federal Government that are not present today? If you had a wish list in this emergency area, what would be on it?

Mr. SILVERS. Mr. Chairman, I think that the Federal, State, and local partnership, using FEMA on the Federal level, serves as coordinating and cohesive effort for the country in time of emergencies and disasters. It works with the respective States, and the States, of course, work with their local governments.

I think that all the resources would be put to bear, and have been in the past, and I do not think we can pinpoint any one item.

Senator MATHIAS. Let me pinpoint one and ask you about that and ask some of the other members about it. What about helicopters, for example? They are of some importance in highway accidents, perhaps not so important to Mr. Yeldell because they don't operate very well in city streets, but out on some of the parkways and the outer beltways and freeways, do we have enough helicopter resources?

Major McDonald?

Mr. McDONALD. I could respond from my experience in Montgomery County. We have ready access to Maryland State Police helicopters, and that has been very beneficial.

Senator MATHIAS. How about the Virginians?

Mr. RULE. We have the park police, Fort Belvoir, at the time, if there are pilots available.

Senator MATHIAS. No feeling that there is a shortage?

Mr. McDONALD. Well, I think you touched on it earlier. It depends on the magnitude of the disaster. There could be one in a couple of different parts of the State that would wipe out the State's capability early.

Senator **Mathias**. Or if you had a bus or something like that——

Mr. **McDonald**. Exactly.

Senator **Mathias**. Which we hope will not happen. But that would obviously overtax.

Mr. **McDonald**. If there was some central person, number, office that you could contact to request that assistance when needed, it would be very beneficial to Maryland, I feel.

Mr. **Yeldell**. Senator, I think, also, in regard to the Federal response, following the disasters of January 1982, the police chief, in conjunction with the Army, has now been provided two additional helicopters of significant capacity. Once outfitted, they will have the ability to use them on water as well.

So I think, here again, there has been a response to a need, and I think that that perhaps gives the District the kind of capability it needs.

Mr. **Milliken**. Mr. Chairman, we in Arlington have a good relationship with the park police and, through them, to their helicopters. Our problem is that air resources are limited in that the helicopters and the manning for those helicopters are not available on a 24-hour-a-day basis, so that the inquiry would be into the adequacy of their resources for around-the-clock manning of their helicopter services.

Mr. **Russell**. Mr. Chairman, from our point of view, in our small city, the best thing that the Federal Government can do is provide standardized training programs, so we will all have the same type of standard program.

From the paperwork involved and some of the other things, it is much quicker if we do it ourselves. The training programs would be very handy if we could standardize them, so we would all have the same type in all the jurisdictions.

Senator **Mathias**. Let me ask Mr. Yeldell, what is the status of the Washington area warning system?

Mr. **Yeldell**. The Washington area warning system, sir, is a function of FEMA. It is controlled by FEMA at the central point at Olney. We are participants in that, and we act as an alternate control point, but it is not our operation.

Senator **Mathias**. That is both the sirens and the hotline?

Mr. **Yeldell**. That is correct, sir.

Well, yes, the sirens are controlled through that structure, and then there is a communication linkage through a hotline.

Mr. **Silvers**. Mr. Chairman, that is applicable for the entire metropolitan area. Some time ago, we recognized that the local governments did not have the finances to invest in these very expensive warning systems, and therefore—at that time it was OCD [Office of Civil Defense]; it has changed its name, now it is FEMA—they maintain and install these sirens in the Metropolitan Washington area.

There certainly have been difficulties. In the rural counties, for example, I understand from one of my colleagues on the Virginia side, they had some difficulty with the installations, and others have, also.

We have not had any difficulties as far as Prince Georges County is concerned. There are many, many sirens, and they are adequately taken care of and maintained and provide a wide decibel reading.

Mr. RUSSELL. Mr. Chairman, in all honesty, if those sirens never went off in a month, nobody would miss them.

Senator MATHIAS. Well, if they never went off, ever, it would be a subject for celebration.

Mr. RUSSELL. Even at testing time.

Senator MATHIAS. But, unfortunately, if we ever need them, we want them to be able to go off, and the question is whether they are adequately maintained and whether they are adequately designed. The other thing is whether the area, as it changes—and it changes very rapidly—outgrows the system.

Now, for instance, in downtown Washington, the number of large office buildings that have been built in the last 10 years may have changed the whole acoustical pattern of the city. I don't know whether it has or not, but it is just speculation on my part. What was an adequate siren system 10 years ago may not be adequate for the configuration of the buildings in the city today, and that could be the same in any part of the area. I just mentioned downtown.

I gather this is a FEMA responsibility. We will address some questions to FEMA on how often they look not only at the mechanical maintenance but whether or not the adequacy of the system as measured against the topographical changes has kept pace.

Mr. YELDELL. I think you should also understand, Senator, that this is a continuing concern that is addressed by the Emergency Preparedness Subcommittee at COG and that FEMA representation is always at that meeting. FEMA is now proposing to implement a system called DIDS, which is a radio-controlled system to bypass the telephone lines in terms of instituting sirens.

I suspect that they are going to be testing that. It is Prince William County, I think, where they have had a major problem with the sirens. But it is continually addressed in conjunction with the COG subcommittee and FEMA.

Mr. SILVERS. Yes. As a matter of fact, Mr. Chairman, recently FEMA executed a contract. We had some difficulties with a few of our sirens. They are mechanical objects. We test them locally as well, by the way. They are tested locally and, conversely, directly by the Federal Government out of Olney.

The reason these sirens are sounded is that they are mechanical; they are mechanisms that can go out of service. As a matter of fact, ofttimes we find vandalism with some of these sirens. So it may be annoying, but we do publicize this. FEMA puts out a press release. We all receive copies of that press release, but if the newspapers do not elect to publish it, there is nothing FEMA can do about it.

But we sound those sirens to ensure that they are in operational readiness. When they are not, FEMA, upon notification, with its contractor, will respond to the scene and repair that particular siren.

There have been problems, again, in some of the other areas, but in Prince Georges County, we are very satisfied with the warning system.

Senator MATHIAS. Speaking of testing equipment, what about the communications equipment in Metro tunnels? Mr. Milliken, are you familiar with that?

Mr. MILLIKEN. I am, Mr. Chairman. Arlington County has a radio system for communication from above ground into the tunnels, and that works satisfactorily. We are quite pleased with it.

Senator MATHIAS. Has it been tested recently?

Mr. MILLIKEN. It is tested periodically, Mr. Chairman.

Senator MATHIAS. How about recently? [Laughter.]

Mr. MILLIKEN. I don't know about recently. It was tested recently, my fire chief tells me.

But we are satisfied with that, and we understand that some of the other jurisdictions in the area are looking at our system as the Metro system is expanding out and other jurisdictions have tunnel sections in their areas.

Mr. YELDELL. Senator, this was one of the major problems that hit us at the January disaster. Now, the fire department in the District of Columbia will go on line March 18, with a system that gives them communication capability throughout the system, and the metropolitan police departments will be on line within 3 months.

Senator MATHIAS. What steps have to be taken before local jurisdictions are ready to implement the COG proposal? Major, do you want to respond to that?

Mr. McDONALD. I did not hear the question, sir.

Senator MATHIAS. What steps must be taken before local jurisdictions are ready to implement the COG proposal?

Mr. McDONALD. Well, I have a copy of it here with me, and it is being reviewed by our chief and certain political figures and command level officers in both the police and fire departments.

We are just making some minor modifications, and we do not see any real great problems with this most recent final draft. My only concern is that the document does not become so thick that it gets filed on one of these shelves like civil defense plans did, that nobody ever understood or read. It has got to be short enough to——

Senator MATHIAS. If it gets too heavy to lift off the shelf, you can be sure that it——

Mr. McDONALD. We would rather read them than weigh them.

Senator MATHIAS. Yes.

Mr. MILLIKEN. Mr. Chairman, the update of our emergency management plan will be concluded, we hope, by around September of this year, and in that plan we expect to accept and implement a large part of the Council of Governments' proposals.

Senator MATHIAS. Maybe I should put it this way. Is there any jurisdiction here that is having major problems with the COG proposal?

[No response.]

Senator MATHIAS. Is life going to be easier if the COG plan is adopted? Will it make your jobs easier or harder? Is it going to create benefits or is it going to create problems? Yes?

Mr. RULE. I think it will be a framework that we all can work within. We will be in better shape than we were before January 1982.

Mr. McDONALD. I think that if it is just a document that becomes filed, over a period of time, the use of it is going to become rather limited.

The key that I have found in responding to emergencies is to know people when you get there. Know who the decisionmakers are and who your counterparts are. There is going to have to be some kind of an ongoing simulation, training, or whatever, if it is just a response to interjurisdictional boundaries, so that the right people know each other.

Senator MATHIAS. According to the General Accounting Office, Alexandria does more testing than any other jurisdiction. Maybe that is because you have a mayor who was an airline pilot. [Laughter.]

He has gone over those check-offs every time he took off. Maybe he is just going through the check-offs every day.

But, at any rate, one of the problem areas that has surfaced and which appears to have been a problem in the Metrorail accident is triage.

Chief, perhaps you could share with us some of the problems that persist in tests and emergencies involving sorting out victims and how this particular problem can be minimized, which is a distressing sort of human problem.

Mr. RULE. We were not involved in the Metro incident. We have had some Metro drills. It is a training problem. It is a familiarity problem, and it is a continual, repetitive activity that has to be done so that the hospital people, the paramedics, police and fire people understand what the system is and then implement it once an activity happens, an incident happens.

Senator MATHIAS. Do you think it is typically a training problem?

Mr. RULE. Yes, sir. It is not only in the metropolitan area; it is basically throughout the United States. When the activity happens, there are not enough incidents that have happened that are actual events, and it is a training problem. It is making sure that everybody is speaking the same language. You have triage as sorted by color coding, that the reds go to the reds, the greens go the greens, and so forth. I personally believe it is a training problem and can be resolved through proper training.

Senator MATHIAS. Well, it is a serious problem, and it is one of the more distressing aspects of emergencies. It is where the human factor is introduced.

I have a son who works on an emergency ambulance crew, and I know how serious it is from his point of view.

I don't like to talk about evacuations on any scale, whether it is evacuating a building or evacuating a neighborhood or, God forbid, something more than that. But are jurisdictions adequately prepared to evacuate a large number of victims, by a large number, 50 to 100, say, to hospitals, victims who need hospitalization, in an expedient fashion which will conserve the chance to recover and minimize the loss of life?

Mr. SILVERS. Mr. Chairman, if you are speaking of evacuation of a particular city, the fire department, police department of most jurisdictions have that capability. If you are speaking about evacuation because of the threat of a crisis relocation, it is a highly controversial subject, leastwise in Prince Georges County.

Several of our jurisdictions have voted against even participating in it. There is a bill now before the County Council of Prince Georges County in opposition to crisis relocation. Crisis relocation is not realistic.

I testified in 1956 before the House Military Applications Subcommittee about evacuation, which was very impractical. There is no place to evacuate to. I can certainly speak for Prince Georges County, and I find that the crisis relocation is not a pragmatic approach to a horrible, horrible problem which may occur.

If you are speaking about evacuation in the case of fires and flooded areas, yes, it is practical; it can be done. It is reasonable. People are willing to cooperate. But if you talk about evacuating mass areas, the vast communities of the District of Columbia, Prince Georges County, and the Metropolitan Washington area, where are we going to go? Are we going to have host areas with supplies for these people?

Frankly, as director for a number of years, I have recommended to the constituents of Prince Georges County, stay home; you will be a lot safer.

Senator MATHIAS. Do the disaster plans contemplate and designate a place where you would take 100 patients to a hospital? Say that is the problem. Where do you take them?

Mr. SILVERS. Sir, there is a point when you have to use, in my opinion, a little bit of logic and judgment. There are areas if there was an emergency in Prince Georges County. The major hospital we have in the county, a very large one, is Prince Georges General Hospital. It has quite a population.

We have a contract now, we have had a contract for the past 15 years, with a large taxi company. They have two-way radios in their vehicles. I won't mention their name, but at any rate, for $1 a year, those taxis are turned over to the Prince Georges County government.

Senator MATHIAS. For $1 a year, you ought to mention their name. [Laughter.]

Mr. SILVERS. Well, I would be glad to if you will allow me to. It is the Blue Bird and Yellow Bird Taxi Co. of Prince Georges County, MD. I am very delighted that they do offer their services. They offer their personnel, their resources, to work in concert with us. Fortunately, we have never had to use them, but we could use those to help evacuate people if we had to from the several hospitals we have in the county. We can transport them based on the need and the determination to other locations, other hospitals. If the other hospitals are filled, we can transport them and place them in improvised buildings, churches, schools. Rest assured these people can be taken care of.

Senator MATHIAS. The media are an important factor in this whole picture. Would you comment on the proper techniques to use in effectively employing the media to keep the public informed during an emergency?

Mr. YELDELL. Senator, I don't know whether I am the right person for this one. [Laughter.]

First of all, I would agree with you, the media are critically important. What we attempt to do in the District is to go to the media with one source of information rather than having multiple sources, and, of course, making the point of the centralization of that information open and available to the media.

For instance, in a snowstorm, we direct the media to the snow control center. In any other type of emergency, they are free to come to the command center.

Senator MATHIAS. From the Mayor's command center directly to a——

Mr. YELDELL. The snow command center. Or they may choose to come to the Mayor's command center because they want to see not only what the snow center is doing but what others are doing as well.

So what we try to do is make it available to the media at the point of decisionmaking.

Senator MATHIAS. There are other kinds of communications. Are there any gaps or are there any unnecessary overlaps in the areawide communications system? Does anybody know of either gaps or overlaps?

Mr. YELDELL. I think this is where we perhaps have our major problem in the communications systems, not only in terms of overall but perhaps even in terms of inside the District. It is the area where we are giving the greatest amount of attention right now.

I think the fire departments in the region, perhaps, have an excellent communications structure through FEMARS, and the police have an excellent system, but I think they are both vertical systems rather than having the ability to cross over. I think this is where one of the major problems exists. It certainly exists in our city. We do not have capability for interagency contact and then for the agencies to contact the command center which is supposed to serve as a central point.

So I think, if there is an area that has a major problem associated with it right now, it is the proper type of communication.

One of the things we are trying to do, Senator, is to develop a mobile command bus that will give us the capability to interact with the appropriate agencies from one point, rather than having several scattered command posts at each site. We hope to make that available not only to the District but to the region when it is developed.

Senator MATHIAS. I think that is an important subject, and I am glad that gets on the record at this time.

In talking to the General Accounting Office and in talking to COG, we talked about multiple disasters. I hope they never happen, but occasionally they do. Do any of the local jurisdictions have multiple disaster plans?

Mr. MCDONALD. I know that Montgomery County does not, but that is what we kind of look to as far as COG is concerned, a mechanism of not only providing but requesting assistance from other jurisdictions when multiple disasters do occur.

One that comes to mind that I was a part of was the IBM incident. Had a second incident of that nature occurred at the same time in Montgomery County, we did not have enough specialized personnel to deal with a similar second incident, but we did have communications with Prince Georges and Fairfax with standby teams that could have helped us should another event occur.

I would like to mention something else. You had asked earlier about the capabilities of transporting injured to the hospital. The hospitals have emergency plans they put in effect, much like we do. I know that Suburban easily accommodated about 20 or 25 on the date of that IBM incident, and that was just one single hospital. Others were on standby that could have accommodated many more.

Senator MATHIAS. I have just one last question. I guess this is really addressed to the Virginians. In Virginia, you have a lot that is remarkable. You have Mount Vernon; you have Stratford Hall; you have Monticello; you have Williamsburg; you have Richmond; you have the University of Virginia; you have the Blue Ridge Mountains; but you also have those bridges.

Now, what about those bridges? What do you do to get ambulances, fire trucks, and other emergency equipment back and forth across those bridges when there is rush hour traffic and there are other obstructions? What steps can be taken to improve the traffic situation if emergency vehicles simply have to travel during rush hour?

Mr. RULE. We tend to use northern Virginia hospitals as much as possible. [Laughter.]

And they have good capability. It is a problem. But in the Air Florida crash, particularly southside of the incident, going north, the Alexandria Police Department and Arlington and the State patrol pretty well shutdown the George Washington Parkway for access. Unfortunately, we did not have enough people to rescue, but I think, between the different hospitals in northern Virginia, their capacity is much more than is probably anticipated in the metropolitan area.

Senator MATHIAS. Realistically, if the District of Columbia needed help and it was 5 o'clock in the afternoon, it would be pretty tough, wouldn't it, for Virginia to respond? Not a Virginia problem——

Mr. RULE. It would be easier for us to go into the District of Columbia at 5 at night than for them to come to us because of the outflow.

Senator MATHIAS. No. All right, let's reverse the traffic. Let's say it is at 8 o'clock in the morning.

Mr. RULE. We would have a real problem. That is why crisis relocation has been attacked so much by our local governments. You cannot get across the 14th Street Bridge during normal traffic, let alone the mass evacuation of people to another area.

Senator MATHIAS. It is not all that easy at 5 o'clock, either, let me tell you. [Laughter.]

Mr. SILVERS. Mr. Chairman, I would think that questions like that should be raised. Certainly it would pose a severe problem. But you have the District of Columbia police, you have the State police, and you have various other police forces and law enforcement people who have a skill and a capability.

You are speaking about a bridge. Certainly it would create a hazardous traffic problem, but they could eventually clean a bridge and allow first priority to emergency vehicles. Now, certainly it is going to take time. They are not going to respond as fast because they may be tied up. But the police can rapidly have traffic move, get them off the bridge, and stop traffic from going on the bridge, giving first priority again to those emergency vehicles that are necessary.

Senator MATHIAS. But that becomes a limiting factor in moving emergency vehicles through the whole metropolitan area, doesn't it?

Mr. SILVERS. Yes, of course it does.

Senator MATHIAS. It is not one that, as you suggest, cannot be overcome, and not one that is a total blockage, but at certain hours of certain days, it becomes a part of our problem.

Well, maybe that is as far as we can take this today. We are going to continue with this. Let me say that it is done with the hope of creating a forum in which we can all share our thoughts and our concerns and bring to bear whatever forces we have to improve the situation.

I admire tremendously what the men and women in the field have done, whether they are the firemen, whether they are the police officers, whether they are the military people who are called upon on occasion. I think we all owe them a tremendous debt, and we would be remiss if the record did not reflect that during the course of the day.

But it would be unfortunate if all the heroism and bravery and effort of these people in the field were in some way diminished because the planning and the administrative work had not been done to utilize it to the fullest. I suppose that is, in the long run, what we are up to.

So I thank each of you for being here, and I would hope that you would consider this a continuing dialog and that, as you have thoughts and ideas, you will give the committee the benefit of them.

Thank you so much.

[The prepared statements of Messrs. Herrity, McDonald, Silvers, Milliken, Rule (on behalf of Mayor Charles E. Beatley, Jr., Alexandria, VA), Russell, and Yeldell follow:]

PREPARED STATEMENT OF JOHN F. HERRITY

Mr. Chairman, members of the subcommittee, I am John F. Herrity, Chairman of the Fairfax County Board of Supervisors. I am pleased to be here today to present testimony on behalf of Fairfax County.

The Fairfax County Government has been keenly interested in emergency management preparedness for many years. We have been committed to the concept of planning in advance for disasters since early in the 1970's, when our first Emergency Operations Plan was published. Since that time, our County has grown from a population of around 450,000 to approximately 620,000 County residents in 1982. We have revised our emergency plans several times during that period to ensure adequate protection of the safety, health and welfare of our citizens. In addition to changing our emergency plans, we have also made some very progressive moves to restructure our emergency response capability, through management changes, as well as through the addition of personnel and equipment.

A few of the more recent and innovative changes in the emergency management structure include reorganization of the Police Department, the Fire and Rescue Department and the creation of a Deputy County Executive for Public Safety position. Other emergency response program changes have included the merger of County Park Police into the Police department, the addition of a hazardous materials response team to firefighting forces, and the creation of a volunteer auxiliary police unit. These changes have greatly enhanced our ability to effectively manage routine emergencies as well as disasters.

I. Plan Formulation & Coordination

Fairfax County is currently in the process of revising both the content and the format of its disaster plan. This effort is not a direct result of the tragic events of January 13, 1982. The crash of an Air Florida jet, the Metrorail accident and the snowstorm which occurred on that day pointed out weaknesses in the regional emergency response capability. Our recent planning efforts have been influenced by the analyses of emergency response which were conducted as a result of these incidents.

County staff has incorporated many of the ideas contained in the Metropolitan Washington Council of Governments, "Recommendations to Strengthen the Regional Emergency Response Capability of the Metropolitan Washington Area". As an example, the on-going changes in our emergency planning efforts are concentrated in three areas, the refinement of our basic plan, the development of a Master Resource Manual, and the development of incident specific plans.

The Master Resource Manual, when completed, will cite all resources that might be needed during a disaster, where they can be obtained, and any special considerations for use. The incident specific plans describe responsibility areas, specific actions to be taken, notifications that must be made and which agency is in charge of response to each type of incident. The County currently has some plans by incident type, such as for aircraft disaster and for natural gas shortages.

The following incident specific plans are in various stages of development:

- Construction Accidents
- Dam Failure
- Earthquakes
- Fire; Explosions
- Floods
- Hazardous Materials Spill
- Major Medical Emergency
- Nuclear Attack
- Nuclear Peacetime Incident
- Pipeline Spills
- Riots, Civil Disturbances
- Terrorism
- Thunderstorms (Severe)
- Tornado
- Train Derailment
- Winter Storm
- Electrical Power Shortage
- Food Shortage
- Gasoline/Oil Shortage

Both the Master Resource Manual and the incident-specific plan development are in keeping with the guidance provided by the Fiscal Year 1983 Program Emphasis issued by the Virginia Office of Emergency & Energy Services. Specifically, this guidance is:

- review/update emergency staff assignments, including tasks and responsibilities,
- review/update basic plan and annexes,
- develop SOP for alerting local government forces, and
- review/update Resources Inventory.

Previously, the County Disaster Plan has been scheduled to be revised every two years. Once the new plan is finalized and approved by the County Board of Supervisors, it will be reviewed, revised and tested annually.

II. Communications

Fairfax County's current Public Safety radio communications systems include two main elements:

- vehicular communications provided by approximately 585 mobile transceiver (combined transmitter/receiver) units permanently mounted in Public Safety vehicles; and
- approximately 420 hand-held portable radios carried by Public Safety officers when on foot, away from their vehicles. The low-power, limited antenna characteristics of these portable communications units generate the greatest technical demands upon the systems which support them.

Reception by the Emergency Operations Center (EOC) of radio signals from public safety vehicles and hand-held portables is accomplished by a network of receivers at 14 different sites throughout the County, interconnected by leased telephone lines. In addition, a one-channel Police receiver site covers the Fair Oaks Mall just west of the City of Fairfax.

With very few exceptions, Public Safety radio communications equipment is within applicable industry service life standards, having been acquired and installed in or subsequent to 1975.

Primary Police and Fire & Rescue Command and Control communications are provided in 7 Radio Channels - 4 for Police and 3 for Fire & Rescue. Transmitters are located on the U.S. Government radio tower at Tysons Corner, on the County Administration (Massey) building in Fairfax City, and at a supplemental site at the Springfield Mall area, which is automatically selected when a unit in the southeastern part of the County attempts to use one of the channels available at that site.

In addition to the three primary channels allocated to them, the Fire & Rescue Department uses several Ultra-High Frequency (UHF) special emergency channels for Rescue-Medical Services, a low-band channel for alerting volunteer personnel, and one Very-High Frequency (VHF) channel for interjurisdictional (METRO) use. One of the three primary Fire & Rescue channels is also used for Northern Virginia interjurisdictional support.

For Police use, Fairfax County is licensed and responsible for the central transmission/relay equipment used in the Washington Metropolitan Council of Governments (COG) Police Mutual Aid Radio System (PMARS) which supports 19 COG member jurisdictions. Through PMARS, the Fairfax County Police mobile units have direct car-to-car voice communications in tactical situations with mobile police units from Arlington County, Alexandria, Prince Georges County, Md. and the D.C. Metropolitan Police.

The Sheriff's Department, in addition to the County Police channels, uses a state-wide police low-band frequency, and one special shared television channel and one VHF channel for Courts security.

The Department of Animal Control has a low-band system and also uses the County Police channels.

Fairfax County meets the Fiscal Year 1983 Program Emphasis requirements for communications as promulgated by the Virginia Office of Emergency and Energy Services.

III. Equipment & Supplies

The determination of appropriate quantities and types of equipment necessary to provide an adequate public safety response in Fairfax County is based on a perceived need for rapid response. To some degree, the National Fire Protection Association offers guidance for firefighting equipment acquisition, and the Commonwealth of Virginia Emergency Medical Services offers standards for ambulances. Generally, equipment is obtained based on what is necessary to meet the objective of an approximately 10 minute response time. The following response times are average figures in minutes for 1981:

Fire & Rescue Department[1]	Minutes
Fire Calls	4.86
Basic Life Support	5.06
Advanced Life Support	6.37

Police Department	
Time of Day	
12:00 Midnight - 8:00 A.M.	11
8:00 A.M. - 4:00 P.M.	14
4:00 P.M. - 12:00 Midnight	12

In accordance with existing Mutual Aid Agreements, Fairfax County Public Safety equipment and personnel will respond to requests to assist other jurisdictions. The following chart indicates vehicle strength of the two primary public safety departments.

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[1] Does not include Emergency Operations Center processing times.

FAIRFAX COUNTY

POLICE AND FIRE AND RESCUE DEPARTMENTS

VEHICLE FLEET

	1983
POLICE DEPARTMENT	
Marked Cruisers	214
Marked Station	16
Unmarked Cruisers	134
Marked Canine Cruisers	10
Unmarked Station Wagon	1
Motorcycles	19
Paddy Wagons	7
Mobile Command Bus	1
Pick-up Truck	1
Trucks or Vans	9
Trailer with Generator	1
Truck (Mobile Video Unit)	1
4WD Vehicles	2
	416
FIRE & RESCUE	
Ambulances	54
Brush Units	19
Pumpers	62
Tower Units	13
Squad Trucks	8
Special Apparatus	4

FIRE & RESCUE (CONTINUED)	1983
SERV Vans	13
Sedans	31
Station Wagons	16
Unmarked Sedans	7
Unmarked Vans	6
Pick-up Trucks	3
Step-Van	2
(Truck/Van) Suburban	9
Mobile Command Bus	1
Trainee Bus	1
Cargo Vans	2
Tractor/Lawn Mower	1
	252

As previously mentioned, a Master Resource Manual is currently being developed which will cite equipment and supplies available through all County agencies. This manual is modeled after a similar document produced by the City of San Deigo, California. It lists types, quantities, location and other pertinent information regarding equipment acquisition. The first draft of this document is currently being entered into the County's computer system.

IV. Transportation and Evacuation

The selection of the route to a disaster site in Fairfax County cannot be determined prior to the occurrence of the disaster. The type of incident, location and any access restrictions to the site will not be known until an incident occurs. The most direct route to the site which provides the least hazard to victims and public safety personnel will be selected. Hospitals to be used to treat disaster victims are selected based on proximity to the disaster site and the number of victims the hospital can handle. By pre-notifying the hospital regarding the condition and the number of casualties to expect, a decision can be made as to where to route victims.

The County Fire and Rescue Department has developed a Standard Operating Procedure (S.O.P) #RS126, which outlines operational guidelines for triaging, patient tagging, medical management and on-scene operations during multiple casualty incidents. This procedure designates the transportation officer as being responsible for:

- coordinating the orderly arrival and deployment of incoming rescue vehicles and their personnel,
- establishing a safe routing pattern to and from the scene for all rescue vehicles, and
- establishing a safe landing zone for helicopter evacuation.

V. Personnel and Training

The Fairfax County Police as well as the Fire and Rescue Department maintain training offices for their personnel. In 1981, approximately 11,904 training courses were taken by Fairfax County Fire and Rescue Department personnel. These courses were primarily in the following areas:

- Recruit/Probationary Training
- Monthly In-Service Training
- Call Back/Refresher Training for Suppression Personnel
- Refresher Training for Emergency Medical Technicians (recertification)
- Continuing Education for Cardiac Care Technicians
- Specialized Training Courses
- Call Back/Refresher Training for Non-Career Personnel
- Probationary, Junior Officer, and Command Officer Training for Non-Career Personnel
- Certification Training for Additional Cardiac Care Technicians

It is also noteworthy that the Training Division coordinated the attendance and educational reimbursement for 112 individuals enrolled in degree programs at local colleges and universities.

The Police Department provides officers to the Northern Virginia Criminal Justice Academy for training and liaison purposes. New police recruits receive three months of classroom and practical training through the Academy. The Police Department also provides for on-going state-mandated training for all sworn employees. During 1981 there were twenty-two (22) different schools conducted with a total of 824 hours of in-house instructional time. Sixty-four officers received a total of 1760 hours of classroom training during 1981 in the following areas:

- emergency communications,
- accident investigation,
- death investigation,
- crisis management, and
- supervision

In addition, various County agencies periodically send personnel for training to the National Emergency Training Center in Emmittsburg. Within the last few months, five management level staff members attended a training session of disaster management.

VI. Security Forces and Other Resources

The provision of security at a disaster site is the responsibility of the Fairfax County Police Department. Security forces are identified in the Police Department's Disaster Plan.

VII. Public Relations

In the event of a County-wide disaster, the County's Director of Public Affairs is responsible for coordination with the media. Both the Police and Fire & Rescue Departments have Public Information Officers who are responsible for media contact for other emergency situations.

VIII. Performance During the January 13, 1982 Disaster

Fairfax County first learned of the Air Florida Flight 90 crash via the Washington Area Warning System telephone (GP 2200) at 1615 hours on January 13, 1982. No rescue was performed by Fairfax County, as all living victims had been removed upon the arrival of County Fire & Rescue units. The Fire & Rescue department assisted with lighting and the preparation for diving operations. The person in charge of Fairfax County operations was Alfred A. Savia, who was at that time

Assistant Director of Fire & Rescue Services. It was unclear as to whether the incident commander was from the District of Columbia's Police or Fire Department. Fairfax County was not in charge of the incident, but merely responded to a request for assistance.

In conclusion, we in Fairfax County have a track record of developing and implementing emergency plans for County incidents. We have revised our plans in the past to meet the changing needs of our community, and are in the process of another major revision at the present time. We have supported efforts to enhance regional emergency preparedness. Our nine member Board of Supervisors has endorsed the "Recommendations to Strengthen the Regional Emergency Response Capability of the Metropolitan Washington Area", which was produced through the Metropolitan Washington Council of Governments. The committment of Washington Metropolitan area jurisdictions to the concepts and the dollar support of the federal government as outlined in that report will ensure the completion of necessary emergency management tasks.

REFERENCES

Annual Report, Fairfax County Police Department, 1981

Crash/Fire/Rescue - Fairfax County, National Transportation Safety Board, Docket NO. SA-477, Exhibit 60, January, 1982

Emergency Operations Plan, Fairfax County Police Department, March, 1983

Fairfax County Profile, Fairfax County Office of Research & Statistics, 1982

Fairfax County, Virginia Five Year Radio Communications Plan (FYRCP), Fiscal Year 1984 - 1985, January, 1983

Fiscal Year 1983 Program Emphasis, Commonwealth of Virginia, State Office of Emergency and Energy Services, August, 1982

Statistical Report, Fairfax County Fire & Rescue Services, 1981

Triage Plan - Disaster Response, Fairfax County, Virginia Fire & Rescue Services Operating Procedural Memorandum, Number RS#126, November, 1981

FSA - 64 (5/72)

Replaces Rescue S.O.P. #69

FAIRFAX COUNTY VIRGINIA	FIRE AND RESCUE SERVICES STANDARD OPERATING PROCEDURAL MEMORANDUM NO. RS #126
TO: ALL FIRE AND RESCUE SERVICES PERSONNEL	DATE: NOVEMBER 12, 1981
Initiated by: SUPERVISOR OF FIELD FORCES	Approved By The Director George W. Alexander
SUBJECT: TRIAGE PLAN - DIASTER RESPONSE	

In recognition of the possibility that a multiple casualty incident of unusual magnitude could occur at any time, for any number of reasons within the geographical boundaries of Fairfax County, the following Standard Operating Procedures for triaging, patient tagging, medical management, and on the scene operations have been developed.

It is difficult to establish a hard and fast definition of what constitutes a disaster or to develop a single approach to its management. However, for the purpose of establishing general operational guidelines, a multiple casualty incident (disaster) will be defined as: "An extraordinary event resulting in more than one casualty and where, by the nature of its unusual impact and complexity will necessitate that the medical care given to these victims will be provided by more than one responding unit and most likely will require initial assessment, prioritizing care on the basis of the severity of the injuries and number of patients involved, continual evaluation stabilization and evacuation to any number of area hospitals by whatever means appropriate and available."

I. FIRST STAGE TRIAGE - First Arriving Unit(s)

A. Survey the Incident Area

The first arriving unit(s) will be responsible for making an initial assessment of the situation and determine the following:

1. The nature of the problem and its exact location(s).
2. The approximate number of patients involved and any unusual circumstances, (gas leak, radiation hazard, etc.) requiring additional precautions or preparation.
3. The need for additional support, personnel, and equipment (including the command bus, disaster trailer, etc.)
4. The placement and assignment of a vehicle to serve as command post with appropriate personnel assigned to initially direct the operation until properly relieved.

A quick survey of all of the injured patients should be carried out by all available fire suppression and E.M.S. personnel. The only treatment which is to be rendered during this preliminary phase of the operation is to deal only with the immediately reversible life threatening problems; compromised airways and capious uncontrolled bleeding. During this phase patients should be directed in "self help" first aid techniques as much as possible.

Once the initial survey of the scene has been completed the geographic areas involved should be divided into quadrents either by existing boundaries (floors, cars, etc.) or by natural ones. Person(s) designated by the incident OIC will serve as a quadrent officer(s) and direct the rescue operations and evacuation of his particular sector.

I. A. (cont'd)

Tagging teams complete with triage tags and crayon pencils should then be deployed into each of these sectors to establish patient care priorities based upon the criteria found on the triage tags. Consideration should also be given to the number of victims, as well as the severity of injuries found in a particular tagging area when determining their priority.

B. Completion of Triage Tags - will be done in the following manner, using a pen or wax crayon:

1. Select the proper colored tag indicating the patient's priority and fold it in such a way that it is in front of the remaining tags. DO NOT SEPARATE THE TAGS. Place the letter "A" in the upper right hand corner above the words "triage tag."
2. In the upper right hand corner, opposite the letter "A", the evaluator should place his first initial and last name.
3. Write in the patient's name and time of assessment.
4. Indicate the age and sex of the patient.
5. On the appropriate side of the card place a small "x" over an injured area and check the proper box.
6. Identify the primary injuries using proper abbreviations whenever possible.
7. Indicate the time and type of any medications or IV fluids adminiistered.
8. If an additional writing area is needed to record meds, fluids, etc., use a DOA tag attaching it to the triage tag. Place the patient's name and tag number on the front.
9. When completed, attach the triage tag and additional treatment tag to either of the patient's arms in such a way as to insure both easy visibility and secure attachment to the patient. Make sure that adequate circulation of the limb is not impared by the tag's placement.
10. If a patient is re-evaluated and his priority changes, flip to the next appropriate tag color and complete the information required. Place the letter "B" in the upper right hand corner above the words "Triage Tag", along with the evaluator's first initial and last name. If an additional evaluation reveals a change in the patient's condition the letter "C" and evaluator's name should then be placed in the upper right hand corner as before.

I. B. (continued)

11. When the patient is to be transported to a hospital facility the lower portion (serrated) of the most recent priority tag color should be torn off after completion by the transporting crew and given to the disposition officer when he assigns them a hospital to transport to.

C. Tagging Priority/Indicate priorities of tags

1. Red Tag
2. Yellow Tag
3. Green Tag
4. Grey Tag

II. SECOND STAGE TRIAGE

A. Physical Set Up

A secondary triage area may be needed on a very complex incident scene. The incident OIC or Medic Operations director will determine if a secondary triage area needs to be utilized. If it is to be used then an appropriate area will be chosen and properly identified. It is expected that in most incidents this area will be in the immediate vicinity of the disaster site. However, it can be anticipated that in certain situations it may be more advantageous to use nearby schools or buildings. Once a site has been chosen it should be divided into four large adjacent sectors corresponding to each of the four patient care priority catagories. These are all to be clearly identified using appropriately colored stakes and flags when they become available. Staffing assignments for each of these areas are to be made as soon as the manpower becomes available, by the medical operations director. These areas must be equipped and staffed prior to patient transport. The most advanced level of trained personnel should be assigned to function in the red and yellow sectors with EMT/A's being assigned to the green area. The grey area should be monitored by a member of the Fire and Rescue Service or a police officer.

III. THIRD STAGE TRIAGE

A. This is done at the hospital by hospital personnel or Fire and Rescue Personnel assigned to the hospital. Personnel assigned to the hospital will be responsible for directing incoming units, insuring the prompt exchange of equipment and supplies, assisting in maintaining communications and performing other tasks as necessary.

NOTE: Hospital personnel should follow their protocol as written.

IV. CHAIN OF COMMAND

In order that an EMS Chain of Command appropriate for the situation is established, the following positions should be designated and be filled by qualified and experienced personnel.

A. Medical Operations Director

This individual will be designated by the incident OIC and should be a senior EMS officer, thoroughly familiar with handling all aspects of multiple casualty incidents. The MOD and the Medical Society's Disaster Chairman, (or his designee) will be ultimately responsible for insuring that all aspects of managing the incident as it pertains to medical care and evacuation are being effectively recognized and met. These duties include, but are not limited to:

1. Patient Evaluation and Care
2. Determine needs; Manpower and Assignment, and Supplies
3. All aspects of Communication
4. Patient Transportation and Hospital Routing
5. Record Keeping
6. Coordination of Rescue Activities with Fire Suppression Officers and Personnel
7. Provide periodic status reports to senior level Fire Officials and the Information Officer

In order to assist the Medical Operations Director in carrying out these responsibilities, he will delegate these responsibilities as he sees fit to individuals he chooses to serve as:

B. Triage Officer

Shall be assigned to each patient care area and will be responsible for seeing that the following is done:

1. Continual re-evaluation of the patients' condition is being done, with retagging and redirection of the patient to another area if necessary.
2. Definitive care is given to patients in his area, including bandaging, splinting, IVs, drugs, etc, and that stabilization is achieved prior to evacuation.
3. Coordinate with the Medical Operations Director and the Disposition Officer the entry and removal of patients into his area, making sure that a written log (see attached) is maintained.

IV. B. (continued)

4. Assign/direct personnel in his area to carry out the above tasks.
5. Coordinate with the Equipment Officer to determine what supplies and equipment are necessary.
6. Continually update the Medical Operations Director or his designee on the sector status, problems, and/or progress being encountered.

C. Disposition Officer

Shall be responsible for the following:

1. Coordinating with the triage officers, direct the orderly evacuation of all patients from the incident scene on the basis of their priority and availability of vehicles.
2. Working with a communication officer to determine the immediate and continual patient care capabilities of nearby hospitals and direct rescue vehicles with patients to these locations.
3. Identify the immediate and on going transportation needs of the patients reporting them to the Medical Operations Officer or his designee.
4. Record the departure information of all patients on the master casualty log and collect the lower section of the triage tag of each patient being transported to the hospital before any vehicle leaves.
5. If helicopter evacuation is to be used, insure that critical patients are routed to this area.
6. Continually update the Medical Operations Director on progress and/or problems being encountered.

D. Transportation Officer

Shall be responsible for the following:

1. Coordinate with EOC and the disposition officer the orderly arrival and deployment of incoming rescue vehicles (ambulances, SERV vans, buses, etc.) and their personnel.
2. Establish a safe routing pattern to and from the scene for all rescue vehicles.
3. If helicopter evacuation is to be used identify and establish a safe landing zone.

IV. D. (continued)

4. Continually update the Medical Operations Director on the problems and/or progress being encountered.

E. Equipment Officer

Shall be responsible for the following:

1. Working with the triage officers to determine the immediate and continual equipment needs for each patient care sector.
2. Insure the availability of supplies and equipment to patient care areas.
3. Working with EOC and the Transportation Officer make arrangements to procure these supplies. (When necessary request that EOC notify supply resources such as Service I, Medical supply companies, nearby hospitals, ect. to make procurement arrangements.)
4. Continually update the Medical Operations Director or his designee on the problems/or progress being encountered.

F. Sector officer shall be responsible for the following:

1. Providing direction for the proper tagging of patients in his/her assigned quadrent.
2. Supervise patient care prior to evacuation.
3. Consulting with and Advising Triage officer and Transportation officer concerning the orderly transportation of patients from his/her quadrent.
4. Working jointly with the assigned Suppression officer to affect rescue, ect.

On a large scale incident involving multiple geographic areas, the Medical Operations Director may elect to use multiple Secondary Triage locations. In addition, if the situation warrants he may elect to use multiple individuals to fill any of the above positions.

PREPARED STATEMENT OF MAJOR THOMAS McDONALD

HONORABLE CHARLES McC. MATHIAS, JR.
UNITED STATES SENATOR
CHAIRMAN
THE SUBCOMMITTEE ON GOVERNMENTAL EFFICIENCY AND THE DISTRICT OF COLUMBIA
SENATE GOVERNMENTAL AFFAIRS COMMITTEE

MR. CHAIRMAN:

MY NAME IS MAJOR THOMAS McDONALD, CHIEF OF FIELD SERVICES BUREAU OF THE MONTGOMERY COUNTY POLICE DEPARTMENT.

I HAVE BEEN ASKED BY COUNTY EXECUTIVE CHARLES GILCHRIST TO REPRESENT THE MONTGOMERY COUNTY GOVERNMENT TODAY.

I AM PLEASED TO HAVE THIS OPPORTUNITY TO TESTIFY BEFORE THE SUBCOMMITTEE ON GOVERNMENTAL EFFICIENCY AND THE DISTRICT OF COLUMBIA OF THE SENATE GOVERNMENTAL AFFAIRS COMMITTEE REGARDING "EMERGENCY PREPAREDNESS IN THE WASHINGTON METROPOLITAN AREA."

OVER THE PAST 4 YEARS, MONTGOMERY COUNTY HAS INVESTED SUBSTANTIAL EFFORT IN EMERGENCY PREPAREDNESS AT BOTH THE POLICY AND MANAGEMENT LEVEL AS WELL AS AT THE OPERATIONAL LEVEL. THIS EFFORT IS DIRECTED BY AN EMERGENCY MANAGEMENT GROUP, CHAIRED BY THE CHIEF ADMINISTRATIVE OFFICER, INCLUDING DIRECTORS OF THOSE DEPARTMENTS WHO ARE PARTICIPANTS IN MAJOR EMERGENCIES. THE EMERGENCY MANAGEMENT GROUP MEETS MONTHLY, REVIEWS THE IMPLEMENTATION OF A COUNTY-WIDE EMERGENCY PREPAREDNESS WORK PROGRAM, CONDUCTS EVALUATIONS OF MAJOR EMERGENCY INCIDENTS, AND UNDERTAKES TRAINING AND SIMULATION EXERCISES. WE ARE PROUD OF THIS EFFORT AND BELIEVE

IT LAYS A FOUNDATION FOR COORDINATED AND EFFECTIVE RESPONSE TO DISASTERS.

AT THE OUTSET OF MOST ALL INCIDENTS, POLICE AND FIRE DEPARTMENTS ARE FIRST RESPONDERS. AS THE FIRST STEP TO MUTUAL UNDERSTANDING AND COOPERATION, THE POLICE DEPARTMENT AND THE DEPARTMENT OF FIRE/RESCUE SERVICES WITHIN MONTGOMERY COUNTY HAVE ESTABLISHED A WRITTEN POLICY SETTING FORTH EACH AGENCY'S RESPONSIBILITIES FOR DAY-TO-DAY EMERGENCY OPERATIONS.

AS THE EMERGENCIES GROW IN MAGNITUDE, THE RAPPORT, EFFICIENCY, AND COOPERATION ENGENDERED BY THIS DAY-TO-DAY OPERATING POLICY CONTINUES TO INFLUENCE THE MUTUAL RESPONSE AND COORDINATION BETWEEN THESE TWO AGENCIES.

THE POLICE DEPARTMENT'S WRITTEN DIRECTIVE SYSTEM ALSO INCLUDES TWO DIRECTIVES FOR DEALING WITH MAJOR EMERGENCIES: ONE TITLED "PUBLIC EMERGENCY OPERATIONS PLAN", AND THE SECOND, "CIVIL DISTURBANCE PLAN." THESE PLANS SET FORTH THE SPECIFIC DUTIES AND RESPONSIBILITIES FOR EACH OFFICER, SUPERVISOR, AND MANAGER WITHIN THE POLICE DEPARTMENT AND ARE FOUNDED UPON COUNTY GOVERNMENT ADMINISTRATIVE PROCEDURES WHICH, IN TURN, SET FORTH THE AREAS OF RESPONSIBILITY FOR ALL DEPARTMENTS WITHIN THE COUNTY GOVERNMENT. SIMILAR INTERNAL POLICIES AND DIRECTIVES ARE FOUND WITHIN THE FIRE AND RESCUE SERVICE.

When an emergency of extreme magnitude or a disaster occurs, the initial response is governed by the day-to-day operating policies of the police and Fire/Rescue Services; but once the magnitude of the incident is determined, the Disaster Notification System is quickly alerted as set forth in the county administrative procedure. Included in this procedure is a Disaster Notification List which dictates who must be notified, dependent upon the scope of the disaster, and who has the responsibility for making the notification.

The Administrative Procedure also sets forth the duties and responsibilities for each department and department director in the county government during a disaster. Further, the Emergency Management Group referred to above, consisting of representatives from the Chief Administrative Office, as well as from the Police, Fire/Rescue, Environmental Protection, health, Transportation, County Attorney and the County's Information Office, is activated to coordinate the response and actions during an actual disaster situation.

The specific action steps to be taken during a disaster are set forth in the Montgomery County Emergency Operating Plan which is tied to the Maryland State Emergency Operating Plan. The county Emergency Operating Plan is currently being revised and updated.

Montgomery County is a signatory to the existing Metropolitan Washington Council of Governments Police Mutual Aid Agreement as well as the Mutual Aid Agreement for Fire and/or Rescue or Ambulance Service. These two documents provide for the requesting or the giving of assistance between any of the jurisdictions which are signatories.

The Air Florida disaster which occurred a little over a year ago uncovered areas of weakness in each of the before named Council of Governments agreements - - particularly apparent were weaknesses in the areas of communication, in the initial requesting of assistance and control of subsequent response, and in the area of command and control over the incident.

Under the auspices of the Public Safety Policy Committee of the Metropolitan Washington Council of Governments, these mutual aid agreements are under review at this time. And, based on the recommendations from the Report of the Metropolitan Emergency Response Task Force: Recommendations to Strengthen the Regional Emergency Response Capability of the Metropolitan Washington Area, new agreements are being developed to incorporate the recommendations of the Task Force as well as correct other possible deficiencies.

The capability to respond and the actual response to a disaster is an expensive proposition. Special equipment may be required and

THOUSANDS OF MANHOURS MAY BE COMMITTED. DEPENDING ON THE PRECISE NATURE AND SCOPE OF THE DISASTER, MANY LOCAL JURISDICTIONS SIMPLY MAY NOT BE ABLE TO COPE WITH THE SUDDEN DEMAND FOR SUCH EQUIPMENT AND MANPOWER RESOURCES.

THE FEDERAL GOVERNMENT OFFERS A SOURCE OF AID TO LOCAL JURISDICTIONS IN DISASTER SITUATIONS. FOR EXAMPLE, THE MILITARY OFFERS A TREMENDOUS RESOURCE NOT ONLY OF MANPOWER, BUT OF EXPERTISE AND EQUIPMENT. HEAVY GRADE CONSTRUCTION EQUIPMENT, EMERGENCY BRIDGE AND ROAD BUILDING EQUIPMENT, EMERGENCY MEDICAL SUPPLIES, TENTS, VEHICLES, HELICOPTERS, ETC. ARE SOME EXAMPLES.

THE ABILITY TO MAKE USE OF THESE RESOURCES CAN BE INVALUABLE TO A LOCAL AGENCY OR AGENCIES DURING A MAJOR DISASTER SITUATION. MUCH OF THIS CAPABILITY NOW EXISTS THROUGH FEMA, BUT THE EXPANSION OF SUCH ASSISTANCE AND THE SIMPLIFYING OF THE REQUIREMENTS FOR REQUESTING SUCH AID WOULD BE MOST BENEFICIAL.

FUNDING FROM THE FEDERAL GOVERNMENT TO UPGRADE DISASTER MANAGEMENT EQUIPMENT WOULD ALSO BE OF A GREAT HELP. IN THE METROPOLITAN WASHINGTON AREA, THE PROVISION OF CERTAIN SERVICES, EQUIPMENT OR FUNDING FROM THE FEDERAL GOVERNMENT ON A CONSOLIDATED BASIS THROUGH THE COUNCIL OF GOVERNMENTS MAY BE A VIABLE ALTERNATIVE THAT PERMITS THE PROVIDING OF MAXIMUM ASSISTANCE AT MINIMAL COST. FOR EVERY JURISDICTION TO BE PREPARED FOR EVERY EVENTUALITY, THERE WOULD BE A NEED FOR A TREMENDOUS COMMITMENT OF FUNDS AND MANPOWER --

a commitment which may possibly never or most probably will seldom be needed. To have such a commitment on a regional basis makes more sense.

Mr. Chairman, may I again thank you for this opportunity to testify. Montgomery County would be happy to assist you and this subcommittee in any way possible.

Sincerely,

Thomas A. McDonald

Major Thomas A. McDonald
Chief, Field Services Bureau
Montgomery County Police

PREPARED STATEMENT OF ROBERT HAL SILVERS

THE PRINCE GEORGE'S COUNTY GOVERNMENT

PRINCE GEORGE'S COUNTY EMERGENCY PREPAREDNESS

My name is Robert Hal Silvers and I have served continuously since June 3, 1955 as the Director of the Office of Emergency Preparedness for Prince George's County, Maryland. Mr. Chairman, the Honorable Parris N. Glendening, Chief Executive for Prince George's County, Maryland has asked me to testify on his behalf regarding the Prince George's County Public Safety community in time of emergency/disasters.

DEMOGRAPHICS

Prince George's County is a highly urbanized, rapidly growing area covering 496 square miles, including eleven square miles of water. The Patuxent River forms the Northern and Eastern boundaries with Howard, Anne Arundel and Calver Counties, respectively. Bounded on the West by Montgomery County, Washington, DC., and the Potomac River, the County extends South to Charles County. The elevation rises from sea level to about 365 feet in the Northwestern section. Its population, estimated at 675,000, is engaged predominantly in wholesale and retail trade, light industry, and in government service. There are 25 incorporated cities and towns in the County, with populations ranging from 300 to 35,000.

In accordance with Prince George's County's Charter, concerning "OEP" duties and responsibilities in emergency/disaster that may affect Prince George's County, Maryland, the following direction and control procedures are adhered to:

I. Organization:

The government organization of Prince George's County is such that it can be readily adapted to supply the direction and control necessary to maximize the preservation of life and property and provide for the general welfare of victims in the event of an emergency or major disaster.

1. County emergency operations, in the absence of a State declaration or a Presidentially declared emergency or major disaster, direction and control comes under the aegis of the County Executive and/or Chief Administrative Officer. In the absence of, or inability of, the County Executive and/or Chief Administrative Officer, duties and responsibilities assigned to them shall be assumed by a designated official. This delegation of authority shall become effective immediately upon issuance of this directive and for execution ONLY upon the order of, or upon a declaration of emergency by, the County Executive and/or Chief Administrative Officer. This delegation of authority shall specifically exclude the authority to issue declarations of emergency, to request a declaration of emergency by the Governor, or to obligate or commit funds, other than those appropriated to the OEP or those made available by proper authority for emergency or major disaster operations.
2. Upon receipt of notice, the Director, OEP, initiates the alerting call up system and alerts all appropriate units having emergency operations responsibilities.
3. County departments/agencies upon alert notification shall assign to the Emergency Operating Center a department/agency liaison to work in concert with the Director, OEP.

II. Emergency Operating Center (EOC):

Prince George's County EOC is located at 7915 Anchor Street, Capitol Heights, Maryland 20743. It provides a secure and protected headquarters and communications center for the direction and control of all emergency and disaster operations in the County. The EOC is in operation at all times with staff varying according to circumstances.

EMERGENCY CALL-UP PROCEDURES: Staffing pattern based on the emergency disaster situation as described below:

CONDITION GREEN: An emergency/disaster may affect the community; standby status.

CONDITION YELLOW: The emergency/disaster is imminent and disaster control representatives will report to the EOC.

CONDITION RED: The emergency/disaster, in fact, has reached the community.

EOC TABLE OF ORGANIZATION
DISASTER CONTROL COMPONENTS

County Executive's Staff:

- Emergency Preparedness Director
- Public Information Liaison
- Public School System
- Department of Health
- Department of Public Works & Transportation
- Department of License & Permits
- Department of Social Services
- Fire Department
- Police Department
- Central Services (Purchasing)
- Hospital Commission Representative
- Office of Law

1. Additional staff members may be required for implementation of the County Procedures for Emergency Management of Resources.
2. Each governmental component's representative shall remain on assignment at the EOC until relieved by an alternate and/or notification by the Director.
3. All department heads shall ensure that essential services are maintained and normal department facilities are manned accordingly.

III. Mutual Aid

All requests for assistance outside the County will be made through the County Executive or his designee, including Mutual Aid Agreements from adjacent Federal agencies or military agencies and mobile support from the State of Maryland National Guard.

IV. Hazard Mitigation

1. Flooding

The experiences of Hurricane Hazel (1954) and Tropical Storm Agnes (1972) indicate the possibility of flooding associated with such natural phenomena as they transit the County. The reservoirs behind Ducket and Brighton Dams have limited flood storage capabilities and an extended period of rainfall soon fills the reservoirs and down stream flooding will then occur. The changing nature of the runoff coefficent for the drainage of these reservoirs has increased the possibility of flash flooding in the Patuxent drainage area.

Historically thunderstorms occur on an average of 30 days per year. Although they may occur in any month, about 75 percent occur during the months of May through August. Heavy rains associated with severe thunderstorms frequently result in serious flash flooding affecting some localized, but densely populated, areas along streams throughout the County.

2. Fires

Although Prince George's County is recognized primarily as a highly developed urbanized area, about 30 percent of its total land area is covered by forests or natural vegetation. Past experience indicates that forest/ground cover fires pose a threat to life and property, particularly during the dry seasons, ie, Spring and Fall. Historically, the majority of ground cover fires have been contained within reasonnable limits. It appears that a more acute threat would be structural fires involving industrial complexes, shopping centers, large residential buildings, etc.

3. Snow/Ice

Snowfall averages 17 inches annually in the County. An unusually heavy snowstorm or severe icing conditions bring a devastating impact on the County in numerous ways, such as downed utility lines, disruption of transportation, and isolation of large numbers of people.

4. Tornadoes

Tornadoes do occur in Prince George's County, although historically their incident has been relatively low. If a tornado was to touch down in a densely populated area, a disaster of major proportions could result.

5. Transportation Accidents

The increasing volume of motor vehicle traffic on roads throughout the County presents a high probability of major accidents involving large numbers of vehicles and people.

Railroads traverse some of the more densely populated areas of the County. In addition, there are several branch line railroads in the Eastern portion of the County. Derailments can and do occur.

The large numbers of aircraft overflying the area, particularly air traffic into or out of Andrews Air Force Base and Washington National Airport, significantly increase the possibility of mid-air collision or other airplane disaster. An airplane crash into a densely populated area could result in a disaster of catastrophic proportions.

6. High-Rise Disasters

The construction of high-rise commercial and residential buildings, resulting in increased concentrations of people, contribute to a variety of potential hazards, including fire, structural collapse and gas explosion. Large numbers of people could become trapped on the upper floors since fire-fighting and rescue capabilities are usually limited above the eighth floor.

V. Statutory Authority and Limitations

1. Prince George's County, Maryland Charter requires:

   a. There shall be a Prince George's County Office of Emergency Preparedness (OEP) headed by a Director of Emergency Preparedness.

   b. The Director shall be appointed by the Governor of Maryland pursuant to the provisions of Article 16A, Section 7, of the Annotated Code of Maryland upon recommendation of the County Executive. The Director shall be subject to the administrative control of the County Executive.

   c. The Director shall be responsible for coordinating the emergency preparation and emergency activities of County government with other governmental units, and shall be responsible for coordinating County activities designated to minimize and repair injury and damage done by such catastrophe.

2. State Law:

   a. A state of emergency in the County may be declared only by the County Executive. Such declaration may not be continued nor renewed for a period in excess of seven (7) days except by or with the consent of the County Council.

   b. The County shall participate in Federal programs for civil defense and disaster preparedness. The Governor, through the Director, MCD & DPA, will coordinate the preparation of plans and programs for civil defense and disaster operations throughout the state.

   c. Services, equipment, supplies and facilities of the offices and agencies of the State of Maryland and of the political subdivisions of Maryland may be utilized to the maximum extent practicable by the Governor to combat disaster and restore normal conditions.

d. As they apply to injuries to person or property incurred on or adjacent to the premises, no actions for damages may be brought against a person, firm, or corporation who allows premises which they own, control, or occupy to be used free of charge during an emergency or major disaster; during inspections or visits connected with civil defense and disaster preparedness; while sheltering persons during an emergency or major disaster; or while supplies and materials are being moved or stored thereat.

e. All personnel, including contractors, carrying out disaster assistance functions, such as the distribution of supplies, the processing of applications and other relief and assistance activities, shall perform their work in an equitable and impartial manner, without discrimination on the grounds of race, religion, sex, color, age, economic status or national origin.

VI. Policy Guidelines

1. A reasonable commitment of forces and resources will be made by the local government before requesting assistance from a higher level of government.

2. In County declared emergencies, State and Federal forces or resources committed will operate in a general support role.

3. During emergencies and major disasters, disaster assistance operations will be continuous and departments and agencies having functional responsibilities in these operations will operate on a 24-hour per day, seven-day per week schedule as may be required. Key personnel, or an agent with authority to act for them in their absence, will be available at all times.

4. The County shall be prepared to assist adjacent jurisdictions. The County shall make such other disaster relief agreements with local private industry and local relief or disaster assistance organizations as may be necessary to assure total involvement of the community in disaster assistance preparations and operations.

Mr. Chairman, this summarization is specifically designed to enlighten your committee, if you will, with brevity describing the role of Prince George's County, Office of Emergency Preparedness and related governmental public safety components and their response in time of crisis.

Should the committee have any inquiries, I would be glad to respond accordingly.

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Respectfully Submitted,

Robert Hal Silvers, Director
Office of Emergency Preparedness
5012 Rhode Island Avenue
Hyattsville, Maryland 20781
699-2660

STATEMENT OF JOHN G. MILLIKEN
VICE CHAIRMAN, ARLINGTON COUNTY BOARD

BEFORE THE SUBCOMMITTEE ON GOVERNMENTAL EFFICIENCY
AND THE DISTRICT OF COLUMBIA
U.S. SENATE

March 16, 1983

Senator Mathias and Members of the Subcommittee, it is an honor for me to appear before you today to testify on Arlington County's capability to perform during a disaster situation. I am John G. Milliken, Vice Chairman of the Arlington County Board.

The Arlington County Government through its Police and Fire Chiefs has been directly involved in the development of the recommendations to strengthen emergency response capabilities of the Metropolitan Washington area.

Last November, twenty-six Arlington officials participated in a program sponsored by the Federal Emergency Management Agency (FEMA) which presented to local officials a model for the development of a Comprehensive Emergency Management Plan. Arlington County is now revising its emergency management plan. The process for development includes hazard analysis, resources identification, procedures to follow and specific directions for triage and evaluation. It will be tested for validity and revised according to the results. Each County Agency will be represented on the coordination and operation groups. Each group will be involved in the development process. During a disaster these same groups will be activated to implement the plan.

During the FEMA program, County officials were exposed to various hypothetical disasters. Among these was a major gasoline leak that infilterated the sewer system in the Crystal City area. That gasoline leak lead to numerous fires in high rise buildings, to the collapse of buildings under construction, and to a hazardous materials incident in nearby Potomac Railroad Yards. As these events were taking place a civil disturbance occurred in another part of the County. Plus there was suspicion of terrorist activity within the community. These multiple incidents and Arlington's reaction to them led the Emergency Management Institute's personnel to conclude that Arlington could cope with most disasterous events.

Arlington learned some valuable lessons from this experience. First, we saw a need to upgrade our plan. Second, we realized that all agencies must participate in disaster management planning. Third, we realized that Arlington could not stand alone if a major event occurred and must accept assistance from other local, state and federal agencies. Fourth, mutual aid agreements for Police, Fire and Public Works are essential means of gaining those additional resources.

The revision of Arlington's plan will include many of the recommendations covered by the Council of Government's report of June 1982. For example, greater emphasis will be placed on training of personnel specifically for a disaster situation. Procedures will be developed for the use of various radio systems, for the use of a command physician at the disaster site an Air Control Officer within the Command Post; for implementation of a color coded system for function designation of command personnel; for installation of direct telephone lines between various jurisdictions; for procedures to freeze the Fire Emergency Mutual Aid Radio System (FEMARS) for disaster use; and for development of communications between the local hospitals of Arlington.

Arlington County has entered into various Police and Fire Mutual Aid Agreements with surrounding jurisdictions. These include the Northern Virginia Fire Response Agreement, the Washington Metropolitan Area Fire Mutual Aid Agreement, the Northern Virginia Law Enforcement Mutual Aid Agreement and the Metropolitan Washington Council of Governments Police Mutual Aid Agreement. Also, there is a separate mutual aid radio network for Police and Fire. These agreements make available, to an affected jurisdiction, apparatus, equipment and manpower resources from other communities. Efforts are underway to conclude Emergency Medical protocols to allow paramedics to treat victims regardless of political jurisdictions.

Arlington's Comprehensive Emergency Management Plan will reflect regional requirements. The inclusion of a standard command and control system will be the cornerstone. Currently, that procedure is being developed through the Fire and Police Chiefs technical committees of the Council of Governments. Once adopted it will minimize command conflicts and establish specific guidelines for use during a disaster. This will greatly increase the region's ability to work together. As it is stated in the Council of Government's June report, an assumption must be made that the local jurisdiction has control of the incident unless a previous agreement is enforced. There is very little operational difference between the Police, Fire and other agencies of any local government. When called upon to assist during a disaster, each of these agencies will be able to work together.

Regional compromise is being reached in two areas. First, the Fire Mutual Aid Agreement is being modified to change the requirements to enact the agreement. Second, Police and Fire officials are working to develop a common language communication system. That is the elimination of numerical signals to indicate certain situations. For example, some areas call an automobile accident with injury a 10-50PI or Signal 9I. Hopefully, all jurisdictions will use plain language and state that it is an automobile accident with injury.

Arlington County is prepared to respond to various types of emergencies. The severity of the incident could tax our resources and require initiation of mutual aid agreements. In turn, Arlington could provide specialized personnel or equipment to a sister jurisdiction. Arlington County Police hostage negotiations team and emergency response units (SWAT) are such specialized teams. Our paramedic units would be called upon in any mass casualty incident. Hydraulic lifting and cutting tools are available for use, as are special Hurst tools which could be used by any jurisdiction during a Metro accident, building collapse or other similar disaster.

It is Arlington's understanding that the Federal Emergency Management Administration will be the coordinator of federal activities at a disaster scene. Thus, a FEMA representative would act as an advisor to the local incident commander. This federal focal point is necessary because of the various roles and responsibilities of different Federal Agencies. Some of these roles may overlap and someone is needed to decipher the responsibilities during the disaster.

In this metropolitan area, no one individual jurisdiction can function in isolation. Today all jurisdictions including Arlington are working in a cooperative manner to anticipate problems and plan their resolution. Arlington County continues to support this cooperative effort.

City of Alexandria, Virginia

All-America City

CHARLES E. BEATLEY, JR.
MAYOR

March 4, 1983

The Honorable Charles McC. Mathias, Jr.
United States Senator
Maryland
358 Russell Senate Office Building
Washington, D.C. 20510

Dear Senator Mathias:

I am writing in response to your invitation of February 15, 1983 to testify on "Emergency Preparedness in the Washington Metropolitan Area" on March 16, 1983 at 2:00 p.m. before the Subcommittee on Governmental Efficiency and the District of Columbia of the Senate Governmental Affairs Committee.

I will be represented by Alexandria's Fire Chief, Charles H. Rule. You requested a summary of his statement which I have included below. His remarks respond to the issues addressed by you in your February 15, 1983 letter and reflect the current status of the topics mentioned.

The Alexandria Emergency Operational Plans with minor changes is adaptable to the Washington COG Report, "Recommendations to Strengthen the Regional Emergency Response Capability of the Metropolitan Washington Area." As the Action Plan is approved, the plan will be adapted to reflect compatability with the Regional Plan.

Agreement for Mutual Aid purposes has been in place with neighboring jurisdictions for years and is being reviewed by Washington Council of Government Committees. The majority are working operational plans that are used on a daily basis.

The City of Alexandria is equipped to respond to and abate the majority of incidents in the City. With the aid of neighboring jurisdictions, there appears to be needed resources to back up and support the Alexandria effort.

"Home Town of George Washington and Robert E. Lee"

Although there does exist strong sub-regional (Northern Virginia, Washington, D.C., and Maryland suburbs identified as sub-regional) agreements, there is no overall operational plan that covers the entire Metropolitan Washington area. A public domain plan exists titled "National Inter-Agency Management Incident Management System (NIIMS) developed by the U.S. Forest Service, which could be adapted, with modification and minimal expense, for the Washington, D.C. Metro area. This concept is a modular system that can be adapted for use by multiple disciplines and multiple jurisdictions.

The concern that Alexandria has is the management of Hazardous Materials Incidents, and this might be best approached in the area of efficiency and cost effectiveness at the Regional level with Federal guidance and financial support.

Thank you for this opportunity to present our views.

Sincerely,

Chuck Beatley

Charles E. Beatley, Jr.
Mayor

CEB/dp

PREPARED STATEMENT OF JOHN W. RUSSELL

MR. CHAIRMAN AND COMMITTEE MEMBERS, I AM JOHN W. RUSSELL, MAYOR OF THE CITY OF FAIRFAX, VIRGINIA.

THE CITY OF FAIRFAX IS LOCATED IN THE CENTER OF FAIRFAX COUNTY ABOUT 16 MILES WEST OF WASHINGTON, D. C. IT HAS SOME 20,700 RESIDENTS AND ITS LAND SIZE IS ABOUT SIX SQUARE MILES. IT IS THE COUNTY SEAT FOR FAIRFAX COUNTY SO OUR WORK-DAY POPULATION IS CONSIDERABLY LARGER THAN OUR RESIDENT POPULATION. IN ADDITION, MANY OF OUR CITY RESIDENTS COMMUTE TO JOBS AT THE PENTAGON, ROSSLYN, AND DOWNTOWN WASHINGTON EACH DAY.

IN JULY 1981, THE CITY COMPLETED ITS EMERGENCY OPERATIONS PLAN WHICH IS ON FILE AT THE VIRGINIA STATE OFFICE OF EMERGENCY SERVICES. THIS PLAN ADDRESSES THE TYPES OF EMERGENCIES WHICH WERE IDENTIFIED BY AN "ON SITE ASSISTANCE SURVEY" CONDUCTED BY THE STATE OFFICE AND ESTABLISHES COMMAND AND CONTROL, COORDINATION EXIGENCIES, AND AVAILABLE RESOURCES OR MUTUAL AID ALTERNATIVES AVAILABLE TO US FOR DEALING WITH SUCH EMERGENCIES.

THE CITY HAS PREVIOUSLY RESPONDED TO INCIDENTS RELATING TO NATURAL DISASTERS SUCH AS TORNADOES AND HURRICANES, AS WELL AS MANMADE EMERGENCIES SUCH AS OUR 1981 TANK FARM INCIDENT (WHERE THERE WAS A MAJOR GASOLINE SPILL OF SOME 300,000 GALLONS) IN WHICH OUR EVACUATION PLAN HAD TO BE IMPLEMENTED INVOLVING THE MOVEMENT OF ABOUT 400 RESIDENTS FROM THE COMSTOCK HOUSING DEVELOPMENT LOCATED ADJACENT TO THE TANK FARM. AT THE TIME OF THIS INCIDENT, THERE WERE COMPREHENSIVE DISASTER AND EVACUATION PLANS ALREADY IN PLACE FOR JUST SUCH AN EMERGENCY.

THE CITY'S PRESENT EMERGENCY PLAN IS COMPATIBLE IN CERTAIN AREAS WITH THE SUBSEQUENT ACTION PLAN AND JUNE 1982 REPORT OF THE METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS ON "REGIONAL EMERGENCY RESPONSE CAPABILITY." SUCH COMPATIBILITY EXISTS INSOFAR AS HAVING SIGNED POLICE AND FIRE MUTUAL AID AGREEMENTS, A REGIONAL FIRE PROTECTION PLAN, AND MUTUAL OPERATIONAL PROCEDURES WITH OUR NEIGHBORING JURISDICTIONS. THE CITY OF FAIRFAX IS A COMPARATIVELY SMALL JURISDICTION AND WE ARE THEREFORE LIMITED IN THE AMOUNT OF RESOURCES WE COULD BRING TO BEAR IN THE EVENT OF A MAJOR DISASTER SIMILAR TO THE AIR FLORIDA CRASH. ONE AREA WE CURRENTLY PERCEIVE AS WEAK IS OUR ABILITY TO COMMUNICATE WITH OTHER JURISDICTIONS RESPONDING UNDER OUR PRESENT MUTUAL AID AGREEMENTS. WE DO HAVE A REPRESENTATIVE ON THE COUNCIL OF GOVERNMENTS' COMMUNICATIONS SUBCOMMITTEE AND IT IS MY UNDERSTANDING THAT STEPS ARE UNDERWAY TO ADDRESS AND CORRECT THIS PRESENT WEAKNESS SO AS TO ENABLE ALL JURISDICTIONS RESPONDING TO A MAJOR EMERGENCY TO COMMUNICATE WITH EACH OTHER AND WITH THE EMERGENCY'S COMMAND CENTER.

THE CITY OF FAIRFAX THEREFORE FEELS THAT THE MAJOR PROBLEMS WHICH MUST BE RESOLVED WITH REGARD TO EMERGENCY MANAGEMENT PREPAREDNESS FOR THE ENTIRE WASHINGTON, D. C. METROPOLITAN AREA ARE AS FOLLOWS:

1. INTER-JURISDICTIONAL COMMUNICATIONS CAPABILITIES SHOULD BE UPGRADED SO AS TO INSURE ADEQUATE AND EFFICIENT RADIO AND COMMAND COMMUNICATIONS DURING MAJOR EMERGENCY INCIDENTS.

ONE APPROACH TO THIS PROBLEM WOULD BE TO: A. SURVEY EXISTING MUTUAL AID COMMUNICATIONS EQUIPMENT IN TERMS OF PERFORMANCE CAPABILITIES:

B. IDENTIFY ANY DEFICIENCIES IN EXISTING SYSTEMS AND MAKE THE NECESSARY IMPROVEMENTS; AND C. IDENTIFY ALTERNATIVE SYSTEM APPROACHES FOR PROVIDING INTER-JURISDICTIONAL COMMUNICATIONS IN TERMS OF COST, RELIABILITY, AND EFFECTIVENESS.

2. COMMAND AND CONTROL STANDARDS FOR MAJOR EMERGENCIES SHOULD BE ESTABLISHED AND MUTUALLY AGREED ON BY ALL METROPOLITAN AREA JURISDICTIONS.

ALL EMERGENCY PREPAREDNESS PLANS FOR THE METROPOLITAN AREA JURISDICTIONS SHOULD CONTAIN COMPATIBLE AND DEFINITIVE STANDARDS RELATIVE TO BASIC COMMAND AND CONTROL ISSUES. IN THE EVENT OF A MAJOR DISASTER OR EMERGENCY REQUIRING THE INVOKING OF MUTUAL AID PLANS, NUMEROUS JURISDICTIONS AND DIVERGENT RESOURCES WOULD START ARRIVING AT THE SCENE AND SUCH COMPATIBLE STANDARDS WOULD DO MUCH TO ELIMINATE ANY PRELIMINARY CONFUSION AS TO WHO IS IN OVERALL CONTROL OF THE SCENE AND IN THE COORDINATION AND USE OF THE MASSIVE RESOURCES (BOTH PERSONNEL AND EQUIPMENT) ARRIVING AT THE DISASTER SCENE.

IN CONCLUSION, I WOULD POINT OUT MY AWARENESS OF THE FACT THAT THE METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS' "METROPOLITAN EMERGENCY RESPONSE TASK FORCE" HAS WORKED DILIGENTLY IN AN EFFORT TO RESOLVE THESE ISSUES WHICH WE PERCEIVE AS MAJOR PROBLEMS. WE PLAN TO CONTINUE OUR PARTICIPATION ON THE VARIOUS SUBCOMMITTEES WHICH ARE WORKING ON THE ACTION PLANS AND TO DO OUR PART, HOWEVER SMALL, IN SEEING SUCH PLANS THROUGH TO ADOPTION. I THANK YOU FOR YOUR ATTENTION AND FOR THE PRIVILEGE OF HAVING BEEN ASKED TO TESTIFY BEFORE THIS COMMITTEE.

PREPARED STATEMENT OF JOSEPH P. YELDELL

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

I AM JOSEPH P. YELDELL, DIRECTOR-DESIGNATE OF THE OFFICE OF EMERGENCY PREPAREDNESS (OEP) FOR THE DISTRICT OF COLUMBIA. IT IS MY PLEASURE TO BE HERE TODAY TO TESTIFY ON BEHALF OF MAYOR MARION BARRY, JR., ON THE SUBJECT OF THE DISTRICT'S EMERGENCY PREPAREDNESS PLANS. LET ME ASSURE YOU THAT MAYOR BARRY SHARES THE CONCERNS OF THIS SUBCOMMITTEE.

FOLLOWING THE MULTIPLE EMERGENCIES OF JANUARY 13, 1982. THE MAYOR DIRECTED THE CHIEF OF POLICE TO ESTABLISH A TASK FORCE ON EMERGENCY RESPONSE, CHAIRED BY THE ASSISTANT CHIEF OF POLICE FOR FIELD OPERATIONS, WITH A VARIETY OF EXPERTS IN LOCAL, REGIONAL AND NATIONAL GOVERNMENT AS PARTICIPANTS. THE MISSION OF THIS TASK FORCE WAS TO STUDY THE IMPACT OF THE MULTIPLE EMERGENCIES OF JANUARY 13, 1982, ON PUBLIC SAFETY RESPONSES, AND HOW RESPONSES TO MULTIPLE EMERGENCIES CAN BE IMPROVED IN THE FUTURE. THE POST DISASTER EVALUATION REPORT WAS ISSUED IN APRIL, 1982, AND THE DISTRICT IS USING IT AS A BASIS FOR RESTRUCTURING ITS EMERGENCY RESPONSE CAPABILITY.

YOU HAVE ASKED WHAT ROLE THE MAYOR HAS AS CHIEF EXECUTIVE DURING ANY EMERGENCY. IT SHOULD BE CLEARLY UNDERSTOOD THAT THE MAYOR ASSUMES COMMAND OF ANY EMERGENCY. HOWEVER, THE MAYOR, AS THE CHIEF OPERATING OFFICIAL, HAS RESTRUCTURED THE OFFICE OF EMERGENCY PREPAREDNESS, AND DESIGNATED THIS OFFICE AS THE FOCAL POINT FOR COORDINATION OF ALL EMERGENCY RESPONSES. THIS RESTRUCTURING WILL BRING THE OEP IN LINE WITH THE FEDERAL SYSTEM. JUST AS THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) SERVES AS THE FOCAL POINT FOR THE FEDERAL GOVERNMENT, THE OEP WILL FUNCTION AS THE COORDINATING AGENCY FOR THE DISTRICT OF COLUMBIA GOVERNMENT. TO ENSURE THAT AN OVERALL COORDINATION IS CLEARLY IDENTIFIED, THE MAYOR HAS DESIGNATED THE DIRECTOR OF OEP AS THE SENIOR RESPONDING OFFICIAL TO SERVE AS THE COORDINATOR FOR ALL AGENCIES AND RESOURCES. THE CHAIN OF COMMAND IS AS FOLLOWS: MAYOR, CITY ADMINISTRATOR, CORPORATION COUNSEL, DIRECTOR (OEP), AND THE RESPECTIVE PUBLIC SAFETY AGENCIES AS NECESSARY.

IN ACCORDANCE WITH THE MAYOR'S DIRECTION AND THE RECOMMENDATIONS OF THE "POST DISASTER EVALUATION REPORT", THE OEP WILL FUNCTION AS THE "CENTRAL COMMAND POST" FOR ANY AND ALL EMERGENCIES AND AN INCIDENT-COMMANDER WILL BE DESIGNATED FOR EACH INDIVIDUAL EMERGENCY. THE NATURE OF EACH EMERGENCY WILL DETERMINE THE OFFICIAL OF THE RESPECTIVE PUBLIC SAFETY AGENCY WHO WILL SERVE AS "INCIDENT-COMMANDER". FOR INSTANCE, IN A POLICE EMERGENCY, THE SENIOR POLICE OFFICIAL ON THE SCENE WILL BE THE INCIDENT-COMMANDER CHARGED WITH ADDRESSING THE EMERGENCY. HE WILL ALSO BE THE DETERMINANT OF WHATEVER ADDITIONAL RESOURCES ARE REQUIRED. HE WILL IN TURN, KEEP THE CENTRAL COMMAND POST UPDATED THROUGHOUT THE EMERGENCY.

SUBSEQUENT TO THE MULTIPLE EMERGENCIES OF JANUARY 13, 1982, THERE HAVE BEEN MANY DISCUSSIONS BETWEEN OEP, METROPOLITAN POLICE DEPARTMENT, FIRE DEPARTMENT, METRO, REGIONAL AND FEDERAL OFFICIALS

WHICH HAVE RESULTED IN THE ON-GOING MODIFICATION OF APPROPRIATE LOCAL AND REGIONAL PLANS TO REFLECT THE LESSONS LEARNED IN HANDLING MULTIPLE DISASTERS.

AS AN EXAMPLE OF HOW THE DISTRICT ENVISIONS THE UTILIZATION OF ITS RESOURCES DURING A MULTIPLE EMERGENCY, LET ME UTILIZE THE SCENARIO SUGGESTED BY THIS COMMITTEE IN ITS LETTER TO THE MAYOR: THERE IS A TERRORIST ATTACK ON THE DISTRICT BUILDING, COMBINED WITH A MAJOR POWER FAILURE AT THE VANNESS SUBSTATION, ACCOMPANIED BY THE EARLY STAGES OF A BLIZZARD, WHILE A THREE ALARM FIRE HAS BROKEN OUT AT A LARGE DOWNTOWN DEPARTMENT STORE. FURTHER, BECAUSE OF THE BLIZZARD, BOTH D.C. AND FEDERAL EMPLOYEES HAVE BEEN GIVEN EARLY DISMISSAL NOTICE TO TAKE EFFECT OVER THE NEXT TWO HOUR PERIOD TO ACCOMMODATE THE STAGGERED DISMISSAL TIME OF THE FEDERAL WORK FORCE.

THE OFFICE OF EMERGENCY PREPAREDNESS WOULD SERVE AS THE COORDINATING OFFICE FOR ALL FOUR EMERGENCIES.

MPD WOULD RESPOND TO THE TERRORIST ATTACK WITH SUFFICIENT FORCE TO CONTAIN THE ATTACK, THEREFORE, THE SENIOR MPD OFFICIAL ON THE SCENE WOULD BE THE INCIDENT-COMMANDER AND, IF NECESSARY, WOULD BE THE DETERMINANT OF WHETHER ADDITIONAL RESOURCES, SUCH AS THE FIRE DEPARTMENT TO EVACUATE PEOPLE FROM UPPER FLOORS AND PROVIDE AMBULANCE SERVICE TO THE INJURED WHERE REQUIRED.

TO RESPOND TO THE ELECTRICAL POWER FAILURE, OEP WOULD HAVE BEEN NOTIFIED BY PEPCO OF THE FAILURE, THE AREA AFFECTED, AND WHETHER POWER WOULD BE DIVERTED FROM ONE POWER STATION TO ANOTHER, AS NECESSARY. OEP IN ACCORDANCE WITH ITS COG AGREEMENT, WOULD NOTIFY ALL JURISDICTIONS AFFECTED BY THE POWER OUTAGE AND THE DIVERSION OF POWER. ADDITIONALLY, UTILIZING ITS STANDARD OPERATING PROCEDURES FOR SUCH SITUATIONS, OEP WOULD NOTIFY THE APPROPRIATE CITY PUBLIC SAFETY OFFICIALS DEPENDING ON THE NATURE OF THE EMERGENCY RESULTING FROM THE POWER FAILURE. OEP WOULD MAINTAIN COMMUNCATIONS WITH PEPCO THROUGHOUT THE EMERGENCY.

THE FIRE DEPARTMENT WOULD RESPOND TO THE FIRE AT THE DEPARTMENT STORE ACCORDING TO ITS SOP'S FOR DOWNTOWN FIRES. THE SENIOR FIRE OFFICIAL ON THE SCENE WOULD FUNCTION AS THE INCIDENT-COMMANDER FOR THE CONTAINMENT OF THE DEPARTMENT STORE FIRE. HERE, AS WITH THE POLICE, THE INCIDENT-COMMANDER WOULD DETERMINE THE NEED, IF ANY, FOR ADDITIONAL RESOURCES.

THE CITY ADMINSTRATOR, DIRECTORS OF THE DEPARTMENT OF TRANSPORTATION, OEP, D.C. OFFICE OF PERSONNEL MANAGEMENT AND U.S.O.P.M. WOULD COMMUNICATE REGARDING THE STATUS OF THE WORKFORCE DURING THE BLIZZARD. PROCEDURES ARE PRESENTLY IN PLACE TO DETERMINE:

1) WHETHER OR NOT THE WORKFORCE IS TO REPORT FOR WORK:
2) IF AT WORK, WHETHER OR NOT THEY WILL BE RELEASED AND WHEN.

ONCE A DECISION IS REACHED, OEP WOULD CONTACT THE OFFICE OF THE PRESS SECRETARY TO BEGIN THE PROCESS OF NOTIFYING THE MEDIA. SIMULTANEOUSLY, OEP WOULD INITIATE ITS EARLY DISMISSAL NOTIFICATION PROCEDURE.

THIS WOULD INCLUDE:

1) METRO BUS/RAIL FOR TRANSPORTATION ADJUSTMENT
2) MPD FOR TRAFFIC CONTROL
3) AGENCY DIRECTORS FOR PROPER NOTIFICATION OF THEIR EMPLOYEES.

ADDITIONALLY, ACCORDING TO OUR AGREEMENT WITH COG, AREA JURISDICTIONS WOULD BE NOTIFIED OF THE EARLY DISMISSAL OF FEDERAL AND D.C. EMPLOYEES.

THE DEPARTMENT OF TRANSPORTATION WOULD PROCEED WITH THE DISTRICT'S SNOW REMOVAL PLAN, WHICH INCLUDES TREATING (SALTING/SANDING AND/OR PLOWING) MAJOR ARTERIALS FIRST AND PROCEEDING TO SIDE STREETS WHEN POSSIBLE. DOT SNOW CENTER WOULD STAY IN CONSTANT CONTACT WITH OEP THROUGHOUT THE EMERGENCY.

THE POST DISASTER EVALUATION REPORT HAS CITED SEVERAL SITUATIONS WHERE ADDITIONAL RESOURCES OR EQUIPMENT WOULD HAVE IMPROVED THE DISTRICT'S RESPONSE TO THE EMERGENCIES OF JANUARY 13th.

CONSISTENT WITH THE DISTRICT'S BUDGETARY PROBLEMS, EACH AGENCY HAS BEGUN THE PROCESS OF ADDRESSING EQUIPMENT/RESOURCES RECOMMENDATIONS OF THE REPORT. FOR EXAMPLE, MPD, WITH THE COOPERATION OF THE U.S. ARMY, NOW HAS TWO ADDITIONAL LARGE CAPACITY HELICOPTERS THAT CAN CARRY EIGHT PEOPLE AND, ONCE PROPERLY EQUIPPED, WILL POSSESS THE ABILITY TO LAND ON WATER.

MOREOVER, MPD AND FIRE DEPARTMENT HAVE ADDRESSED THEIR INABILITY TO COMMUNICATE THROUGHOUT THE METRORAIL SYSTEM. THE FIRE DEPARTMENT WILL POSSESS THE CAPABILITY ON MARCH 18, 1983, WHILE MPD WILL HAVE ITS SYSTEM OPERATIONAL WITHIN THE NEXT THREE MONTHS.

THE CITY IS ALSO PURSUING PRIVATE AND FEDERAL RESOURCES TO ASSIST IN EXPANDING ITS EMERGENCY RESPONSE CAPABILITY. FOR EXAMPLE, THE REPORT RECOMMENDED THAT THE HULL OF THE FIRE BOAT BE STRENGTHENED TO INCREASE ITS ICE CUTTING CAPACITY TO ALLOW IT TO OPERATE ON THE POTOMAC UNDER CONDITIONS SIMILAR TO THOSE THAT EXISTED ON JANUARY 13, 1982. THE PROPOSED MODIFICATION ALONG WITH GENERAL REPAIR

REQUIRED OF THE FIRE BOAT, IS QUITE EXTENSIVE AND FUNDS CANNOT BE IMMEDIATELY IDENTIFIED TO COMMIT TO THIS PROJECT.

HOWEVER, BEING AWARE THAT THE STEUART PETROLEUM COMPANY REGULARLY OPERATES ITS BARGES ON THE POTOMAC THROUGHOUT THE WORST OF WINTER, OEP CONTACTED MR. WILLIAM SAUL, PRESIDENT OF STEUART TRANSPORTATION WHO HAS COMMITTED TO PROVIDE WHATEVER ASSISTANCE IS REQUIRED BY THIS AGENCY IN TERMS OF BREAKING ICE TO ENHANCE RESCUE OPERATIONS ON THE POTOMAC. WHILE WE STRONGLY FEEL THAT THE DISTRICT MUST MOVE AHEAD WITH THE RECOMMENDED REPAIR OF THE FIRE BOAT, WE FEEL THAT THERE IS AT LEAST IN PLACE A REASONABLE CAPABILITY FROM THE PRIVATE SECTOR TO ASSIST US IN THIS VITAL AREA UNTIL THE REPAIRS/ MODIFICATIONS CAN BE COMPLETED. ADDITIONALLY, WITH THE ASSISTANCE OF FEMA, WE HOPE TO IDENTIFY FEDERAL RESOURCES WHICH MIGHT BE AVAILABLE TO ADDRESS THIS AND OTHER EQUIPMENT REQUIREMENTS. JUST YESTERDAY, I MET WITH MR. JOHN BRUCKER, REGIONAL DIRECTOR OF FEMA IN PHILADELPHIA, TO BEGIN DISCUSSIONS ALONG THIS LINE.

THE BIGGEST PROBLEM STILL TO BE OVERCOME IN THE AREA OF COMMUNICATIONS IS THE INABILITY OF VARIOUS CITY AGENCIES TO COMMUNICATE WITH A CENTRAL COMMAND POST AND WITH EACH OTHER. SEVERAL TASK FORCE GROUPS ARE LOOKING AT THIS SITUATION. THE CITY IS CURRENTLY REVIEWING ITS ENTIRE COMMUNICATIONS CAPABILITIES WITH A VIEW TOWARDS MODERNIZATION AND POSSIBLE CENTRALIZATION OF ALL COMMUNICATION SYSTEMS EXCLUSIVE OF POLICE AND FIRE. NOTWITHSTANDING THE CITY'S EFFORT, IT SEEMS CLEAR THAT SOME FEDERAL ASSISTANCE MAY BE REQUIRED TO RESOLVE THIS PROBLEM.

ON BEHALF OF THE MAYOR, I WOULD LIKE TO THANK THE SUBCOMMITTEE FOR CONVENING THIS HEARING AND GIVING THE DISTRICT OF COLUMBIA THE OPPORTUNITY TO EXPRESS ITS VIEWS. I AM AVAILABLE TO ANSWER ANY QUESTIONS WHICH YOU MAY HAVE.

Senator MATHIAS. The subcommittee will stand in adjournment.

[Whereupon, at 4:13 p.m., the subcommittee recessed, to reconvene at the call of the Chair.]

EMERGENCY PREPAREDNESS IN THE WASHINGTON METROPOLITAN AREA

WEDNESDAY, MAY 18, 1983

U.S. SENATE,
SUBCOMMITTEE ON GOVERNMENTAL EFFICIENCY
AND THE DISTRICT OF COLUMBIA,
COMMITTEE ON GOVERNMENTAL AFFAIRS,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:30 a.m., in room 562, Dirksen Senate Office Building, Hon. Charles McC. Mathias, Jr., chairman of the subcommittee, presiding.

Present: Senator Mathias.

Staff present: William Leonard, staff director; Eileen Mayer, chief counsel; Monica Healy, professional staff member; and Sandi Muschette, chief clerk.

OPENING STATEMENT OF SENATOR MATHIAS

Senator MATHIAS. The subcommittee will come to order.

Today the subcommittee convenes its second day of hearings on "emergency preparedness in the Washington metropolitan area." The purpose of these hearings is not merely to have an inventory of the emergency response capability. However, the purpose of the hearings is to see if there are ways to improve emergency response capabilities.

With the help of those closely involved in the day-to-day operations of emergency preparedness, including, I am happy to say, many of the witnesses today, we are optimistic that we can make some improvement. We are hopeful that we can reach the goal of assuring all the people in the National Capital area that some kind of assistance will be available, for all types of emergencies.

We encourage the witnesses to share with the subcommittee their insight into the problems of the emergency services system and their thoughts about how to solve them. If you are not willing to talk about the problem then we are all wasting our time here.

The only way to ensure an efficient response system is for those involved in the process to commit themselves to an open and sustained dialog about the strengths and the weaknesses of the region's preparedness capability.

I am not asking for leakers or for anybody to criticize without reason, but if there are problems we ought to know them and we want to know them. If we do know them we can try to help with them.

The Council of Governments who testified at the first hearing, set the stage for the review in its comprehensive 1982 report which recommended 72 ways to improve the system. The Council of Governments followed up this report with an action plan for local jurisdictions.

So, the ball is now in the court of the local jurisdictions to carry the process along by either implementing the COG recommendations or making some constructive alternative suggestions. If done effectively then the metropolitan area plan could well prove to be a model, a pilot system for the whole Nation.

Great strides have been made within the last year in this matter, and I think we are on the right track. In the long run we will all suffer if coordination and emergency response problems are not resolved.

The first step is to identify and acknowledge these problems, and then everyone, including the members of the subcommittee, can contribute to the effort to resolve them. It is encumbent upon us to work together to ensure that we continue to move forward rapidly along the course that has been cooperatively mapped out.

We cannot afford to get derailed. I am confident that with the cooperation of all the jurisdictions we will in fact stay on the right track.

Our first panel of witnesses will include Dr. Mark Smith, the associate director of the Division of Emergency Medicine at George Washington University Hospital; Dr. Frank Brown, the director of emergency medicine at the Washington Hospital Center; Tom Hawkins, the fire chief of Arlington County, VA; Harry Shaffer, the assistant chief of the District of Columbia; and Tad Weigle, the assistant general manager for transit operations for WMATA.

As they are taking their place, let me welcome a group of visitors from Nigeria who are members of the legislative staffs of both the State legislature and the National Legislature of Nigeria who are visiting Washington and who are here today to observe some of the operations of the Congress. We are happy to welcome them and have them with us today.

Gentlemen, I will ask you to try to summarize your statements in about 3 minutes each so we can have time for some questions. Dr. Smith?

Dr. SMITH. Thank you, Mr. Chairman. I would like to summarize the testimony I have prepared for the subcommittee and submit my entire statement for the record.

Senator MATHIAS. Without objection, a copy of your entire prepared statement will be inserted in the record.

TESTIMONY OF MARK SMITH, M.D., ASSOCIATE DIRECTOR, DIVISION OF EMERGENCY MEDICINE, GEORGE WASHINGTON UNIVERSITY HOSPITAL; FRANK L. BROWN, JR., M.D., DIRECTOR, EMERGENCY MEDICINE, WASHINGTON HOSPITAL CENTER; THOMAS M. HAWKINS, FIRE CHIEF, ARLINGTON COUNTY, VA; HARRY H. SHAFFER, ASSISTANT FIRE CHIEF, OPERATIONS, DISTRICT OF COLUMBIA FIRE DEPARTMENT; AND THEODORE WEIGLE, ASSISTANT GENERAL MANAGER FOR TRANSIT OPERATIONS, WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

Dr. SMITH. The events of January 13, 1982, the Air Florida jet crash and the Metro derailment, made it clear that the Washington, DC, metropolitan area was unprepared to effectively respond to a mass casualty incident.

Our region's ability to handle such an incident depends on three components: first, the quality of the day-to-day emergency medical services—that is, the ambulance system; second, each jurisdiction's own internal mass casualty incident plan; and third, a coordinated region-wide disaster plan.

In other words, managing a mass casualty incident is not a simple extension of local day-to-day EMS operations. However, the existence of a multiple casualty incident plan is only the first step in the development of an adequate disaster response. The plan is useless unless it is taught, trained, and drilled. Simulated disaster scenarios need to be used.

These are not one time experiences. In order for a mass casualty response capability to retain its finely honed edge, the plan must be taught, trained, and then drilled over and over again. In some of our jurisdictions, that training has been sorely lacking.

In addition to the integral need for both jurisdictional and regional disaster plans, I would like to make some specific suggestions that, if effected, could help make the disaster response program of the metropolitan area a model for the rest of the country.

A multiple casualty incident vehicle, stocked with disaster supplies for 50 to 75 victims, needs to be obtained for the District of Columbia.

Although the number of radio frequencies available is adequate to handle communications during a mass casualty incident, protocols for who talks to whom and on which frequency need to be practiced and drilled by rescue personnel.

If physicians are to be used at the site of a mass casualty incident, they need to be designated beforehand, have expertise in emergency management, be trained with the other rescue personnel in the specific protocol of the mass casualty incident plan, and participate in the disaster drills.

Each area fire department and ambulance service needs to have an emergency preparedness coordinator who will be in charge of mass casualty incident planning and training. Although the general principles of mass casualty incident management can be adhered to for most types of disasters, hazardous material mishaps and radioactive material spills will require a specially trained, equipped, and readily available individuals. The District of Columbia does not now have a hazardous materials team.

In summary, if I were in charge of allocating the resources and the money that will be required to upgrade the mass casualty incident capability in the District of Columbia—the region that I know best—I would appoint someone as mass casualty incident coordinator in the fire department; hone the current draft mass casualty incident plan; train, train, and then train some more; obtain a mass casualty incident vehicle and five more ambulances for the District; and develop a hazardous materials team.

Thank you, Mr. Chairman.

Senator MATHIAS. Thank you, Dr. Smith. I am going to withhold questions until each member of the panel has spoken.

Dr. Brown?

Dr. BROWN. Thank you, Mr. Chairman. I would echo the recommendations of Dr. Smith specifically, and in my opening remarks, I would like to give a general overview of my concept of disaster preparedness in the District.

There are at least five essential elements in the chain of effective disaster response—notification and alert, incident command and control, mobilization of resources, prehospital emergency medical services response, and local or regional hospital response.

The integration of these five links into a coordinated system requires three additional activities—communications, resources, and patient care capability.

Any system of effective disaster response must combine the aforementioned five elements and three systems into a functional unit in the interest of maximum community preservation.

It must also be recognized that regional disaster preparedness is a three-tiered proposition that derives from the following.

No. 1 is the efficacy of the local jurisdiction's daily EMS health care delivery system with respect to communications, resources, and patient care.

No. 2 is the multidisciplinary—and I underscore multidisciplinary—creation of a concise mass casualty incident plan within each local jurisdiction. Such plans should include provisions for periodic systems checks and drill evaluations.

No. 3 is the compatible meshing of local jurisdiction plans to effect a regional plan.

In response to the catastophic events of January 13, 1982, COG established the metropolitan area emergency response task force. The mission of this task force was to examine the emergency response action and activities associated with the January 13 disasters and to develop recommendations to strengthen regional emergency response capability. The subsequent report from COG I have submitted with my prepared statement.

The creation of an effective system requires an enormous commitment of professional expertise and resources. I am convinced that the COG report is a superb first step toward the achievement of coordinated, competent regional disaster preparedness.

I hope that these subcommittee hearings will result in the necessary level of Federal resource commitment in terms of manpower, equipment, and finances to make the subsequent steps necessary to make effective disaster preparedness in the Metropolitan Washington area a reality.

Thank you.

Senator MATHIAS. Thank you very much, Dr. Brown. Without objection, a copy of your entire prepared statement will be inserted in the record.

Chief Hawkins?

Mr. HAWKINS. Thank you, Senator. I think from Arlington County's point of view the disaster preparedness changes that were recommended in the COG report began to be implemented. I think in the fire departments through the region that those particular recommendations, many of those recommendations, have been implemented in our own local plan. For example, the operations chiefs are looking at a terminology—common terminology—and some other common communications systems within the region.

I think one of the other areas that we need to be working on would be the regional training during a disaster event. That is, the more we work together the more we can work together during an event if it does occur.

I think there needs to be more cooperation with some of the Federal agencies within the area to help us put on these regional events.

Thank you.

Senator MATHIAS. Thank you very much, Chief Hawkins. Without objection, a copy of your entire prepared statement will be inserted in the record.

Mr. Shaffer?

Mr. SHAFFER. Thank you, Senator Mathias. I have submitted a statement for the record, and I will just comment briefly on some of the points in the statement.

Senator MATHIAS. Without objection, a copy of your entire prepared statement will be inserted in the record.

Mr. SHAFFER. Essentially, we are prepared to respond to emergencies involving fire, structural collapse, transportation accidents, calls for emergency medical assistance, routine types of emergencies that we are prepared to deal with.

We as yet have not been called upon to handle a serious radiological or a serious hazardous material incident. If we were called upon, our response would be somewhat limited. We need some resources in this area. Our radiological monitoring equipment needs to be surveyed, updated, and surely we need to improve our response for hazardous material incidents.

We have made some significant strides in the area of emergency medical care and the implementation of the mass casualty incident plan, a draft of which I have made available to you.

Senator MATHIAS. Without objection, a copy of the draft plan will be inserted in the record.[1]

Mr. SHAFFER. That draft has now been finalized and is in the final stages of being implemented. Certainly the need to train on that is very evident.

The biggest concern we have at the moment is to get our hazardous material response team in service. We are moving in that direction. However, it will be at least September before we are ready to be operational with that. We are moving in that direction though.

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[1] See p. 254.

Thank you very much.

Senator MATHIAS. Thank you.

Mr. Weigle?

Mr. WEIGLE. Thank you, Senator. It is a pleasure to be here. As the other panelists have done, I will quickly summarize the points that you raised in your initial letter and ask that my prepared statement be made a part of the record.

Senator MATHIAS. Without objection, a copy of your entire prepared statement will be inserted in the record.

Mr. WEIGLE. Your first question had to do with decisions to release Federal workers. I raise that one first because our business is a little bit different than my colleagues here. We only operate one entity, and that is mass transit. Our friends here have to respond to every kind of emergency. We become one of their clients, so to speak, in the event of an emergency. So, we appreciate their support.

The question of our problem is compounded when severe weather occurs and Federal employees are released. We are mindful of the hardness of the decision that the Federal Government has to make to release employees. Our only point is that we have to work harder to make decisions on early release as soon as we possibly can because we cannot very easily capture our labor and keep it close to where we need it to operate the system earlier in the afternoon.

Said another way, it is very difficult to move an afternoon rush hour up. So, we have to work very closely on release policy.

You asked several general questions about Metro safety. Let me make some points. Since the January 1982 accident, our board has acted forcefully. We have restated our safety policy, and there is an absolute commitment to safety in Metro.

We have strengthened our staff. We have added a fire protection branch, and we in fact hired one of Chief Hawkins' former employees from Arlington County to help us. He is a very fine gentleman.

So, we are making a big in-house effort. We have systematically directed an effort to look at all of our operating procedures. That includes our control room which is in essence the nerve center of Metro. We have an outside contractor coming in to examine all of the aspects of how that system works. We will be acting on some recommendations there this summer.

We have been working earnestly on some communications systems improvements. We recently completed the installation of special antennae that allow the fire districts to talk with each other on their own radio frequencies in the tunnels. We are doing the same for emergency medical services and police services. So, that program is moving along quite effectively.

We are revising our emergency response, recovery, and investigation plan within Metro, and we anticipate that this fall we will see some change in our policies and procedures in that area.

I just want to touch on your last question briefly. The November 7, 1982 drill involved some 1,200 people. It was a scenario of a derailment under the river between Rosslyn and Foggy Bottom. It was carried out by the fire personnel. We supported them. That is the role that they play, and we recognize that.

The last point I would like to make is in the area of equipment. Some people have mentioned that, and we have made available some sums of money through the COG to buy emergency response vehicles. I understand the Fire Chief's Liaison Committee is working very earnestly on the strategy for purchasing that equipment.

That concludes my summary statement.

Senator **MATHIAS**. Several of you have mentioned hazardous materials and radiological problems. What is the state of your information as to the exposure to that kind of problem? Are there hazardous materials being transported through the National Capital area, either by rail or by truck or, I assume, even by air? What kind of exposure do we have?

Mr. **HAWKINS**. Senator, I think from our standpoint we have a very high exposure, given the rail system in Arlington that travels through Washington, DC, south into Potomac yards and through Alexandria.

One of the things we are doing in Arlington is trying to work with the other regional areas in their hazardous materials team. For example, Alexandria and Fairfax have developed those teams. Montgomery County has also.

It would seem a little redundant in cost for everybody to have their own hazardous materials team to react to an event. So we are working under our regional aid agreement to use those particular expertises in the region.

Senator **MATHIAS**. What sort of hazardous materials are you talking about? In order to plan you have to know what to expect. If there were a problem, what are the sorts of materials that you might have to cope with?

Mr. **HAWKINS**. It is my understanding just about everything that is considered a hazardous material goes through Potomac yards.

Senator **MATHIAS**. Chemicals and explosives?

Mr. **HAWKINS**. Yes, and there are radiological materials traveling the highways and through the air, liquid gasses in the yards, a number of other types of materials—corrosives, acids.

Senator **MATHIAS**. Now, if they are going north-south, what route do they take around the city?

Mr. **SHAFFER**. The main north-south rail traffic goes right through the city of Washington. It leaves the terminal station and goes down through Southwest and across the 14th Street railroad bridge.

Senator **MATHIAS**. And then rejoins the passenger line just north of Union Station.

Mr. **SHAFFER**. I believe that is correct, yes, sir. I am told that there are approximately 30 freight trains a day crossing that river. Many of the materials, like Chief Hawkins said, are so exotic. I surely couldn't come up with a list of names, but many of them are environmental hazards. Many of them are quite exotic; they take special extinguishing agents.

This is one of the functions of a hazardous materials team. This is one of the benefits of having one, that they concentrate in this area; they identify the types of things that are being handled and the requirements for handling them, what you have to do to adequately handle such an incident.

We also are concerned with the automobile and truck traffic through the city. We do have specific routes outlined. Route 295 right up through Southeast does have a lot of truck traffic.

One other point is that, in addition to transportation, they really are scattered throughout the city. They show up in laboratories, hospitals, and every university has numerous laboratories that have relatively small quantities perhaps but they still are hazardous in nature and we still must deal with them.

Senator MATHIAS. Of course, if they are on rail and if they are on limited truck routes, you know at least where to look for the problem. So, you can plan ahead as to where the problem will be. Is that planning being done?

Mr. SHAFFER. Yes, sir.

Mr. HAWKINS. Yes, sir. We have a specific railroad plan for the Crystal City area in Arlington that identifies water supply, access routes, et cetera, to the rail line going behind Crystal City.

Senator MATHIAS. And you have a comparable plan for the District?

Mr. SHAFFER. Yes, sir. We are in the process now of reactivating our four rescue squads from combination to full service squads. Two of those squads will go in service in July, squads one and three. Squad three is located in Southeast Washington, the Anacostia area, right adjacent to the 295 Freeway and the Southwest Freeway. Squad three will be designated the hazardous materials response team. So, beginning in July they will get some very intensive training in hazardous material response as well as the accumulation of some needed equipment, the acquisition of a vehicle and so forth so that by September they will be prepared to be in service as a response team.

Senator MATHIAS. Do you get any help from the Federal Emergency Management Agency [FEMA] on this, or do you need any help from FEMA on this?

Mr. HAWKINS. We can always use some help.

Mr. SHAFFER. Everybody could use help. We are getting help from FEMA in the area of training, and we are going to be relying on them.

Senator MATHIAS. Is there anything else you would like to get from them?

Mr. SHAFFER. Yes, some financial assistance to provide some of this material that we need.

Senator MATHIAS. Do you mean the equipment that you need?

Mr. SHAFFER. Yes, sir. I have a list of equipment. To put this squad in service it would cost something in the nature of $60,000 to $65,000 just for the specific equipment needed to handle the broad spectrum of hazardous material, not including the vehicle. That would be just for equipment.

I don't mean to monopolize the conversation, but thinking back on what Chief Hawkins said, there are other hazardous material response teams in the area, and we are in touch with them. So, as much as possible we will not duplicate equipment.

Senator **Mathias**. You anticipated my next question. Are all of the metropolitan area jurisdictions equipped with hazardous material response teams?

Mr. **Hawkins**. No, sir, I do not believe that is correct. Arlington is not. I believe we were probably the only jurisdiction not having a hazardous materials team at this point.

Senator **Mathias**. Should you have one?

Mr. **Hawkins**. Well, when you put it in a list of priorities, I don't know where it would fall. It would not fall as a top priority right now because of the good working relationship we have with the other jurisdictions.

People have to remember that in an incident involving hazardous materials much of the work is done in the identification immediately through the bill of lading, and then you can call in other resources to help.

Senator **Mathias**. Let me ask the doctors how they react in this area. Dr. Smith, you said train, train, train. Is there medical training which could be important in this area?

Dr. **Smith**. Most hospitals have internal hospital disaster plans to manage a multiple casualty incident, but there are certain specific modifications that have to be made when we get patients who are contaminated with radioactive material or with toxic gases—organophosphates, chlorine gas. I think it is important that the hospitals have written plans and have trained their personnel in the decontamination and the management of these victims. To my knowledge, that has not been occurring at this point in the District of Columbia.

Senator **Mathias**. I understand you cannot train and prepare for every conceivable contingency that might occur.

Dr. **Smith**. You cannot, although there are some general principles of management of contaminated patients that apply almost no matter what the type of the contaminant is. It involves ridding the patient of the contaminant, protecting the staff, protecting other patients. Those general principles require that you have a special area. The area gets cordoned off. Those can definitely be trained and drilled, and will manage most cases.

We are in the process now of rewriting and subsequently going to test our radiation disaster plan at George Washington.

Senator **Mathias**. Radiation is the next question. However, before we get to that, Dr. Brown, do you generally agree?

Dr. **Brown**. Yes; I would agree. During the past year we revised our radiation contamination protocol and went through at least two drills.

Senator **Mathias**. What is the radiation exposure in the area? What kinds of problems would you anticipate in the field of radiation?

Dr. **Brown**. I think, as the gentleman had said previously, several kinds of agents are trafficked through the area. In hospitals you have the radioactive chemicals used in the nuclear medicine departments. It is necessary to be able to decontaminate and treat hospitalized personnel who have been contaminated.

Based on the environmental chemicals and toxic materials, as Dr. Smith said, it is important that we are able to decontaminate and appropriately triage patients who come to the hospital from outside the system.

Dr. SMITH. I don't think any hospital in the District of Columbia is equipped to manage 30 or 40 radioactively contaminated—not exposed because there is a crucial distinction—patients who are contaminated with radioactive material. We can manage probably three or four, and that is it. We would call in Bethesda which, I think, has a better capability.

Senator MATHIAS. I suppose that Calvert Cliffs would be one possibility if you were going to have an accident of a major proportion that you might get some patients from. There are other facilities in that area that could generate this kind of problem.

Again, I am not predicting it. I want to make that clear, but do we have the capability to handle it? You could only handle three or four?

Dr. SMITH. Our plan is written to decontaminate three victims, and we are really looking at industrial exposure and laboratory exposure. We are not looking at a nuclear powerplant that blows up.

Senator MATHIAS. Again, let me point out to you that Three Mile Island occurred and nobody got hurt.

Dr. SMITH. It is an order of magnitude greater than we have planned for and I think that most hospitals have planned for. If it occurred, of course, we would respond and do the best we could.

Senator MATHIAS. You have said that there are some differences in different jurisdictions' responses to these kinds of problems. Do you think COG should have the responsibility for overseeing the progress of jurisdictions' efforts to design and implement emergency preparedness plans? Is COG the best we have to do that job?

Dr. BROWN. I think, as I mentioned in my opening remarks, COG's efforts have been commendable. I would like to take a moment if I could and describe for you a system that we have worked out in the District to implement the disaster recommendations that I think should be created in each jurisdiction.

The COG recommendations came forth in June of 1982, and the DC Mayor's Emergency Medical Services Advisory Committee decided that we should have a disaster preparedness subcommittee. So, in October of 1982 that committee was created, and I was appointed chairman of that committee.

Subsequently we recruited 16 health care and public safety professionals to serve on that subcommittee to oversee the implementation of the COG disaster recommendations.

Now, the recommendations that have been made by COG basically refer to four core areas of disaster response—incident alert, command and control, mobilization of resources and communications, prehospital EMS response, and hospital EMS response.

These health care professionals, I must stress, are from several areas—the American College of Emergency Physicians, the Red Cross, the Center for Strategic and International Studies, the DC Office of Emergency Health and Medical Services, the DC Office of Emergency Preparedness, the DC Fire Department and both its firefighting and emergency ambulance divisions, the DC General Hospital, the DC Hospital Association, the DC Paramedic Review Board, the medical society, the police department, the emergency department nurses association, the Council of Governments itself, and last, and important, Walter Reed.

These 16, including myself, public safety and health care professionals are then divided among those four basic areas that I mentioned of disaster response—incident, command and control, mobilization of resources, prehospital EMS response, and hospital response.

They are responsible for looking at the COG recommendations that have been made in those various areas and deciding one of three things: Is there in place what has been recommended; if not, is what has been recommended accomplishable and if so, by when; and if not, then why can it not be accomplished?

I think this is a very important mechanism for overseeing the implentation of the COG recommendations. We have talked a lot about capabilities, but there is a significant lack of coordination, I think, within the jurisdictions. I have to know what the fire department is doing, and the fire department has to know what the police department is doing, and so on and so on.

I would recommend that in each jurisdiction to oversee the COG recommendations there be a committee like this, a multidisciplinary committee, to oversee the implementation of the recommendations and make a final report to COG as I mentioned, and it must specify "is in place" what has been recommended; if not, why not; and can it be implemented.

From that report, we would then have a list of needed resources, and we could come to you with a laundry list of what we really need.

Senator MATHIAS. When do you think those reports will get back to COG?

Dr. BROWN. If this were in step with the COG recommendations, January 1984 would be the deadline for such reports.

Senator MATHIAS. So, we would know at the beginning of next year?

Dr. BROWN. We would know at the beginning what our status is, what is capable but not implemented as of yet, and most importantly what is thought of as not able to be accomplished and why.

Senator MATHIAS. Are you talking areawide or just the District?

Dr. BROWN. We are talking about each jurisdiction copying and endorsing this plan from COG. Each jurisdiction would develop the subcommittee that I have described to you, and each jurisdiction would oversee its disaster preparedness relative to this kind of common mold.

Therefore, if each jurisdiction planned according to this mold, it would be much easier to combine the three jurisdictions into a regional plan because they all had the final common pathway.

Senator MATHIAS. Are there any such jurisdictional committees today?

Dr. BROWN. Yes, in the District of Columbia, my committee is that mechanism.

Senator MATHIAS. However, you really are the only one.

Dr. BROWN. To my knowledge, there is no committee in northern Virginia or Maryland like this, and I think it is very important.

Mr. HAWKINS. Senator, if I could follow up on that, I think what the doctor is somewhat describing and probably does not have knowledge of is the new philosophy that has come out of the Federal Emergency Management Agency. It is IEMS, integrated emergency management systems, which integrates a lot of different local agencies into its disaster management planning team.

From that team, the plan is developed, and then in the event of an emergency, it is then enacted, the group is enacted, into a policy coordinated and operational group. Arlington has started in that particular mode of planning, and we are finding it very beneficial to get the interaction from various agencies to be ready to go in the event something does happen.

Senator MATHIAS. You say that Arlington has started?

Mr. HAWKINS. Yes.

Senator MATHIAS. With respect to the composition of that team, where do the people come from? What are the various agencies?

Mr. HAWKINS. It is about a 36-member team representing the private and public sector, including hospitals, the American Red Cross, police, fire, public works. Anybody who has anything to do with it is on that team. The COG recommendations will be incorporated into the final document.

Senator MATHIAS. Is a part of the agenda each of the areas of COG-made recommendations, specifically where they are relative to those recommendations?

Mr. HAWKINS. Yes.

Senator MATHIAS. Then that will get reported back to COG so we have some areawide——

Mr. HAWKINS. If COG is designated as the areawide coordinated group, then it will be reported back. It would be beneficial to work through the Council of Governments so there is——

Senator MATHIAS. They have some central spot, coordinating zones.

Mr. HAWKINS. Yes, sir.

Dr. BROWN. Is that just northern Virginia or the entire State of Virginia, this multidisciplinary team that you are talking about?

Mr. HAWKINS. Well, we think it is only Arlington. We have taken the lead because of some opportunities we had earlier this year in training.

Dr. BROWN. I think again that it needs to be a larger jurisdiction than just Arlington.

Senator MATHIAS. I think that this dialog right now illustrates exactly what type of needs we are talking about. It is very interesting to have Chief Hawkins' report, which illustrates a need for some coordinating agency to tell you whether this activity existed and where to go for the information.

Mr. Shaffer?

Mr. SHAFFER. I would like to comment on that also. The particular report that the doctor refers to is a COG report. It is a task force report established by COG. The board of directors accepted that report and referred it to the fire chief's committee of COG to implement it.

There are something like 73 recommendations in that task force report. The fire chief saw fit, in order to assure that all of these concerns were met, to appoint a committee of senior operational people as a subcommittee of the fire chief's committee to implement that.

That subcommittee is composed of representatives from the six jurisdictions in the area. We have been working over the last year toward the implementation of all of those recommendations.

We are getting very close now to a final plan of operation that would meet the concerns expressed in that report.

Dr. BROWN. Mr. Shaffer, is there a way for the fire chief's committee to designate a committee that does not have representation from the other elements that are necessary in disaster response? Is it possible for them single handedly to develop a coordinated plan without the input of the other people involved?

Mr. SHAFFER. I don't believe that it is anywhere as single handed. Our task was to oversee and to assure that those were met. It didn't mean that we were going to do them. We delegated many of those tasks to other groups to see that they were in fact being done. We are not necessarily doing them.

The development of the plan itself is just one of many recommendations in there.

Senator MATHIAS. Well, I think all of this raises the question of whether there is enough communication within the community so that the right hand always knows what the left hand is doing. It seems to me that there has to be some central point, as Chief Hawkins said.

Mr. HAWKINS. That is a very interesting question. The doctor listed 16 various agencies, and it is amazing the number of agencies and groups of people that have disaster expertise and they are willing to come out and help you plan and do things and everybody has some type of interest.

Senator MATHIAS. However, if you don't have their phone number in a book somewhere they will never know it happened.

Mr. HAWKINS. Then they come out after it happens and tell you exactly how you should have done it.

Senator MATHIAS. They are going to do that anyway. [Laughter.]

Dr. BROWN. Mr. Chairman, I just wanted to close that area by talking about the objectives of the subcommittee. There are two general categories, short-term objectives and long-term objectives.

The short-term objectives, one, is to oversee DC's COG compatability in terms of disaster preparedness. Second, we want to create a synoptic operational disaster directory. This would be, based on those 16 people, manifested. It would show the name of the agency, the overall disaster mission, the access mode in event of a disaster, and the resources that this particular agency could marshal in the interest of a disaster.

Then the long-term objective, which I think is important, is to hear issues of disaster import in District of Columbia periodically throughout the coming years. I am happy to hear that Arlington is doing that, and that there are other agencies, as Mr. Shaffer has mentioned, that are involved.

I think communication and coordination are ~~key~~, and ultimately there is no preparedness unless there is an overall endorsed and accepted plan that everyone is operating by.

Senator MATHIAS. Everybody knows what it is and where the units are.

Dr. BROWN. Right. You must know that.

Senator MATHIAS. Now, in the same general area an evaluation report on the November 7 Metro drill contained a recommendation that a control hospital be identified at the outset of an emergency.

We had GAO witnesses and other people who said that they need to know what resources are in each hospital. Is there any plan underway to implement the concept of using a hospital as a clearinghouse and setting up that kind of a system?

Dr. SMITH. I think it is important to distinguish control hospital, which I think has the implication that the hospital is running the medical aspects of the disaster response, from the concept of the information clearinghouse hospital, which is a concept that has been endorsed and is currently being effected by the DC Hospital Association.

Now, what that entails is that instead of every separate hospital communicating with either the disaster scene or DC fire communications to let the people on the scene know what the hospitals' bed resources are and manpower resources, all information about hospital resources could be channeled through one hospital. That one hospital, the information clearinghouse hospital, would communicate with the people on the scene.

The DC Hospital Association is currently in the process of trying to select such a hospital and provide it with the—make sure that their communications system is adequate to handle that task, not only having telephone lines but backup radio communications in case telephone lines are down.

There are a number of the hospitals in the District that are interested in serving as the information clearinghouse hospital. As always, it is that interhospital rivalry that one has to deal with. My understanding of the process is that they are calling in a consultant and are at the stage where they are trying to make that selection.

Senator MATHIAS. So, that is an ongoing thing.

Dr. SMITH. That is an ongoing process. I think it is a good idea. I think that it will centralize and serve as a funnel for communications, which was one of the major problems in the Air Florida crash. Hospitals didn't know what was happening, and they had no way of informing the disaster response teams of what their capacities were.

Dr. BROWN. I think also dovetailing with that is a need for a mobile communications vehicle that would be dispatched to the site of a disaster. Hopefully, each jurisdiction would be able to have one of these, and it would be very closely linked with the essential components of disaster response as well as that clearinghouse hospital.

Senator MATHIAS Could that be Chief Hawkins' bright yellow car, just as long as it is designated for that purpose and has adequate radio equipment?

Dr. BROWN. Adequate radio equipment for interjurisdictional communication as well as intrajurisdictional communication.

Senator MATHIAS. How did it get to be yellow?

Mr. HAWKINS. That is a good question, sir. [Laughter.]

Mr. SHAFFER. Senator Mathias, I have just been informed in talking about the concept of the control hospital that the Hospital Association has just hired a consulting firm this week to look into that whole question. It looks as though in about 3 weeks we will have some kind of an answer back, a recommendation from that firm.

Senator **Mathias**. So, there really is a lot of activity going on in this whole area.

Mr. **Shaffer**. Yes, sir.

Senator **Mathias**. Again, I hate to ask these questions because they seem to assume that there is going to be some kind of a disaster, but the whole purpose of this is to prepare for it.

My next question is stimulated by Dr. Smith's comment that they could only accommodate three of four radiation victims. How many burn victims could you handle in the event of a bad fire?

Dr. **Smith**. We could handle 20 or 30 burn victims. In the District of Columbia there is a burn center which is at the Washington Hospital Center specially equipped in the long-term management of burn victims. That would be the site to which those victims would go.

If that hospital's resources were taxed, we certainly could initially manage 30 or 40 major burn victims without serious problems.

Senator **Mathias**. Dr. Brown, what is your capacity for burn victims?

Dr. **Brown**. To be honest with you, Senator, that is under the direction of a Dr. Jordan, and I don't know exactly the number, but I would say that we could handle at least 40.

Senator **Mathias**. I hope you will never have to find out.

Dr. **Brown**. Yes. There is an access system, as Dr. Smith mentioned. His hospital and others in the area would be accessed and then hospitals as far away as Richmond, and Baltimore, Boston, and Philadelphia.

Dr. **Smith**. It is always a hard question to say how many can you handle because the sense is you handle as many as you have to. We could expertly handle a certain number, and then your resources are taxed.

Senator **Mathias**. But you don't tell the ambulance driver to go to another hospital.

Dr. **Smith**. You never turn anyone away. However, hopefully you do have a system where critically ill patients do get spread around to different hospitals so that they get taken of much better in that manner.

Senator **Mathias**. Let me ask a general question. If we had another night such as we had in April of 1968, would we do better today than we did then?

Dr. **Brown**. What happened in April of 1968?

Senator **Mathias**. It was the night of Dr. Martin Luther King's death. We had civil disorders. We had fires. That was the night that I gained an enhanced and enduring concept of the mission of the fire departments because I saw acts of bravery that I couldn't believe that night—firemen going up ladders into burning buildings to rescue people or to ascertain whether or not there were people in burning buildings, acts of unbelievable bravery time and time again. It was an extraordinary night.

Are we better off or worse off than we were in 1968?

Mr. **Shaffer**. That is a rather difficult question to respond to.

Senator **Mathias**. That is how you get your marks. [Laughter.]

Mr. SHAFFER. OK. We will try. The area of civil disturbance is so unpredictable that it is difficult to know.

Senator MATHIAS. I would agree with you because you don't know the nature or the magnitude of a civil disturbance. That is a variable that is hard to deal with.

Mr. SHAFFER. However, given those variables, I would like to believe that it would be better handled because of awareness—for instance January 13 and all of the aftermath of that—the whole area of interest in awareness of emergency preparedness, the development of the various plans.

Speaking for the fire department, I think that our senior managers are more tuned to handling a situation of this type, and I think our training has improved. I believe that our response to mutual aid would be quicker. We have put it to the test on numerous occasions, and I believe it would be better organized.

The intensity of it would be about the same I would think, but I believe our ability to respond to it would be just a little better organized. At least I would like to believe that it would be better organized.

Senator MATHIAS. Are there any other comments on that subject?

Dr. SMITH. George Washington Hospital, for better or worse, has had extensive experience the last several years with civil disturbance situations or situations which could have been manifestations of civil disturbance like the attempted assassination of the President.

I think from our hospital's point of view we are much better trained now to manage in the hospital those kinds of events, and we go into an internal disaster mode that effectively isolates our hospital from the surrounding area and enable us to function effectively as a health facility.

Dr. BROWN. I think that what has been said is true. I also feel though that if there were the coordinative elements in place we would even do better. If there were the necessary clearinghouse hospital and the communications and the prearranged multidisciplinary plans, I think we would do better.

Dr. SMITH. To add to what Dr. Brown said, I am delighted that the draft of the mass casualty incident plan for the District of Columbia appeared along with the summaries of the testimonies.

If we we were to have an Air Florida crash again today, I am not certain that our capacity at this particular moment would be that much better. I think that we have moved forward greatly in the last year with the development of plans and a heightened awareness.

The major thrust over the next 12 months, I think, is going to have to be drilling, educating, and training our rescue personnel. All the plans in the world aren't worth a whole lot if they haven't been in practice.

Senator MATHIAS. That is a valuable point, and I agree with it. I am glad that you have reemphasized that the training function is enormously important.

Dr. SMITH. When people have money to spend it often gets spent on equipment because you have something tangible to show for it. Equipment without the trained personnel to operate it is useless.

Senator MATHIAS. I assume that when all of these plans are in effect that the nerve center in which all of this will operate is the Mayor's Command Center. Am I right, areawide?

Mr. HAWKINS. I wouldn't say areawide.

Senator MATHIAS. For the District clearly.

Mr. HAWKINS. If the event is in the District it would be, of course.

Senator MATHIAS. All right. Now, what would be the nerve center areawide? Do we need one?

Dr. BROWN. I think we do.

Senator MATHIAS. Where should it be?

Dr. BROWN. The area would have to decide that. I think though that again the central coordinating body that would receive the plans from the three jurisdictions would then designate the regional plan which would include the response of the three jurisdictions collectively.

I think that has to be established because we talk about local events. We don't think in terms of regional events where we might have to interface as a region with another region in a mass threat or catastrophe. So, I think that does need to be established.

Mr. SHAFFER. If I could just comment on two things, if I could go back to the training aspect for a moment, I surely would like to reenforce that as a result of our November 7 drill which was a very, very comprehensive drill that Chief Flemming was largely responsible for, involving something in the nature of 30 elements. It was great. It was probably the greatest thing that we have done in the training area. It served as a catalyst to get the various operational plans finalized.

However, the plan is not going to be much good if the people don't know how to use it, people on a day-to-day basis. The people for that drill were pretty well coached so that we could test the plan to make sure the plan worked. It takes a tremendous commitment of resources to conduct a drill like that, but we need to do it. Somehow we have to get the funds and the resources to repeat these kinds of drills.

Senator MATHIAS. When I asked if the Mayor's Command Center would be the nerve center areawide, Chief Hawkins' reaction raised an interesting question.

GAO reported that Fairfax County was the only jurisdiction that had considered the implications of a multiple incident disaster. Of course that raises the question of why other jurisdictions have not. Maybe it is so unlikely that on an actuarial basis you wouldn't commit resources to it.

Mr. SHAFFER. The approach that the committee I am on—the Senior-Ops Committee—is taking is that what you are referring to would be the responsibility of the particular jurisdiction in which the incident occurs. Each jurisdiction would have such a clearinghouse to handle that. If it occurred in the District, yes, the Mayor's Command Center would be the clearinghouse if we had a multiple type of disaster.

Hopefully, when our work is completed we will have what is the framework for a master plan that could then be implemented in all of the jurisdictions, and everybody would be familiar with the plan because they are all using the same plan.

Senator **Mathias**. The implication of what the two of you have said is that the nerve center for a given event would change.

Mr. **Shaffer**. Depending on where it is.

Mr. **Hawkins**. Depending on the magnitude of the event. That is correct. I don't know whether it is feasible to get all six jurisdictions and lock step during a disaster, everybody doing the same thing in every event. That may be pretty well impossible.

Senator **Mathias**. And it may be too bureaucratic and involve too much paperwork to pin it down in overly precise detail.

Mr. **Hawkins**. Yes, sir.

Senator **Mathias**. But at least there ought to be some idea that in one community if there is a problem of a certain magnitude the fire department is going to be the nerve center and another community might decide it is the police department or however they want to do it as long as everyone knows what the general scenario is.

Mr. **Hawkins**. That is right.

Senator **Mathias**. One question, Dr. Smith, which postdates the 1968 riots and fires involves Metro because we didn't have Metro in those days. What about fire in a tunnel? Mr. Shaffer, are you geared up for a fire in a Metro tunnel?

Mr. **Shaffer**. Here again we have taken some tremendous strides in preparation and in planning an intraining. I would like to emphasize that to date we have not had a major fire in a Metro tunnel.

Senator **Mathias**. For which we congratulate Metro.

Mr. **Shaffer**. The January 13 event, of course, was very tragic. We are not trying to in any way minimize the seriousness of that incident, but from the fire department's point of view that would not be a major incident because there was no fire involved.

So, we have refined our plans. We have committed a much larger initial response, resources to the initial response. It is highly structured. We have conducted some drills, some training. We need to do more. We need to do a lot more.

The area of communications is much improved because of what Mr. Weigle mentioned, the communications network is in place so that we have much better communications now, which will make our job a little easier. It is another tool that will help.

However, given the training, I think we have taken some very significant strides.

Senator **Mathias**. But there would be special problems.

Mr. **Shaffer**. There is no question. We have the very nature of the location, the difficulty of getting to it and the time element. This time element seems to be a matter of great concern. Surely it is a matter of great concern to us, but by virtue of the fact that we are there we recognize that there will be a delay, a time element involved, so we are structuring our plans to try to minimize that and to try to deal with it.

There is not much I can do about a train that is in a tunnel under the river. It is going to take a certain amount of time to get there, and there is not a great deal I can do to shorten that length of time. However, we do need the resources to enable us to get there, and now we are getting back to the breathing apparatus and that whole problem.

Senator **Mathias**. And you don't have that breathing apparatus.

Mr. **Shaffer**. No, sir. Not yet.

Mr. **Hawkins**. I would like to react to the Metro issue, the cooperation that has been exhibited between Metro and the local fire departments. A prime example of that is that Metro has just granted the local fire departments $300,000 to implement disaster vehicles and breathing apparatus, long duration breathing apparatus, to enhance our capability of providing rescue services in tunnels.

Also they have taken many of the recommendations of local fire departments and put them into their safety plan. I am sure you are familiar with the evacuation procedures which will be implemented in the trains.

Over the years there have been about 115 specific recommendations brought forth by the local fire departments, and at this point Metro has either implemented, planned to implement, or is in the process of implementing 90 percent of those particular recommendations.

Senator **Mathias**. Who ought to pay for that breathing equipment?

Mr. **Hawkins**. Well, it is coming out of Federal funds at this point. As I understand it, it is a grant that is being passed through to the Council of Governments.

Senator **Mathias**. Is it a FEMA grant?

Mr. **Weigle**. No, Senator. We did this through the Urban Mass Transportation Administration Program. We were instrumental in getting them to qualify this as an eligible capital expense. In this case it is rather unusual because we are passing the money through to COG for them to in turn decide how it ought to be allocated among the jurisdictional fire departments.

It is rather innovative, but it works. My strong feeling is that if we need more of this kind of equipment or other kinds of equipment then I think we have established a precedent using the Federal mass transit funding mechanism as the vehicle—no pun intended—to provide this equipment. I think that is useful.

Senator **Mathias**. Mr. Shaffer, will there be enough money? Are you aware of how large the grant is? Is it going to be enough equipment for your purposes?

Mr. **Shaffer**. Are you speaking of the particular grant?

Senator **Mathias**. Yes.

Mr. **Shaffer**. No, sir.

Senator **Mathias**. Not enough.

Mr. **Shaffer**. No, sir. We were thinking in terms of closer to $1 million to equip our department with the——

Senator **Mathias**. Just the metropolitan.

Mr. **Shaffer**. Yes, sir, just the District of Columbia, to equip our various units with the breathing apparatus.

Senator **Mathias**. Of course, you have more tunnels in the District. A lot of the other parts of the Metro system are surface.

Mr. **Shaffer**. Yes, sir, the majority. I think it is important, too, that you understand that by going to a long duration mask such as we are speaking about, it is a high pressure mask that we have not had formerly. So, therefore, everything has to change, all of the support equipment with that. Just the ability to recharge this mask requires new equipment, pressures, filters, and so forth, to handle it. So, it is not just a question of going out and buying a mask. There is a great deal more to it than that.

Senator MATHIAS. Is there anything that any of you would like to add to this record? I find it a very useful morning. We have found out some of the things that we don't know which are important and where the gaps in communication are. That is perhaps the most important thing of all. Is there anything we should add so that this is a total story?

[No response.]

Senator MATHIAS. If not, thank you all very much for being here. We will followup. Let me say that the subcommittee's doors are open, and if you have ideas and suggestions or complaints, let us know. We will try to be helpful.

[The prepared statements of Dr. Smith, Dr. Brown (with attachment), Messrs. Hawkins, Shaffer (with attachment), and Weigle follow:]

Subcommittee on Governmental Efficiency in the District of Columbia

Committee on Governmental Affairs

United States Senate

Hearing on Emergency Preparedness in the Washington Area

Testimony submitted by: Mark Smith, M.D.

Associate Director
Division of Emergency Medicine
George Washington University Medical Center

President
District of Columbia Chapter
American College of Emergency Physicians

The events of 13 January 1982 -- the Air Florida jet crash and the Metro derailment -- made it clear that the Washington D.C. metropolitan area was inadequately prepared to effectively respond to a mass casualty incident.

At that time, the major deficits of our region's ability to handle such an incident were:

1. Neither the District of Columbia Fire Department nor the Washington metropolitan region as a whole had written, trained and drilled plans to handle a mass casualty incident.

2. Chaos existed at the scene of the aircraft disaster; there was no well laid out command structure and no rational division of tasks into appropriate sectors (triage, transportation, staging, etc).

3. The communications system did not work well. Lines of communication were not laid down prior to the disaster incident. It was not clear which radio frequencies were to be used for which aspects of disaster operation. Some previously agreed to mutual aid channels were not used as they were supposed to be. Many of the command units did not carry radios capable of broadcasting or receiving on the fire mutual aid radio frequency -- the "metro" channel.

4. In the District of Columbia, there was very little coordination or communication between the incident site and the hospitals. Most District of Columbia hospitals received no information from the D.C. Fire communications center; they were forced to rely on public broadcast media for their disaster information. There was neither notification of the onset of the disaster, interrogation for hospital's patient capabilities, nor notification of the termination of the disaster effort.

Since that time some of these problems have been addressed completely, others partially, and some not at all.

The excellence of any region's ability to respond to a mass casualty incident is built on three levels: the day to day Emergency Medical Services system, each internal jurisdiction's mass casualty incident plan, and a regional disaster rescue plan.

1. Each individual jurisdiction must have a day to day EMS system that utilizes modern rescue vehicles and modern equipment, is staffed by well-trained EMTs and paramedics, and is integrated into the medical system in the community. The decreasing availability of money for ambulance operations, equipment, training and continuing education of EMTs and paramedics will exact a heavy toll in our ability to manage mass disasters. The District of Columbia is already short the number of paramedics needed to adequately staff its advanced life support units.

2. Each jurisdiction must have an internal well-planned, well-trained, and well-drilled mass casualty incident plan. A mass casualty incident response is not a simple extension of day to day EMS operations. There are qualitative differences in the command structure, communications network, resource requirements, and patient management protocols that occur in a mass casualty incident which make it different from EMS calls.

   Prior to the 13 January 1982 Air Florida jet crash no such mass casualty plan existed for the District of Columbia much less the Washington metropolitan region. In response to that lack, a very good mass casualty incident plan was written for the Fire Department, of which the Emergency Ambulance Division is a part. On 7 November 1982 that plan was extensively tested in a simulated Metro fire in the tunnel between the Foggy Bottom and Rosslyn stations. Based on that drill, extensive modifications have been made in the plan, although the revised plan has not yet been published.

3. The region must have a regional disaster plan that integrates the mass casualty incident plans from the various jurisdictions. Such a plan is being devised right now under the direction of the Council of Governments. Certain aspects of the regional plan must be reflected in the constituent jurisdictions' plans and vice versa. For example, the terminology that describes the different command roles during a disaster must be uniform among the jurisdictions; the person in charge of the triaging of patients in Fairfax County should have the same title as the person in charge of triaging of patients in the District of Columbia.

I would like to spend the rest of my testimony responding to specific questions that Senator Mathias has asked I address:

1) What is the state of the mass casualty plan for the area jurisdictions?

The District of Columbia plan has been written and is in the process of being revised. I have no direct knowledge of the state of preparedness of the suburban jurisdictions. The Council of Governments is coordinating the writing of a regional disaster plan.

The construction of a multiple casualty incident plan is but the first step to an adequate disaster response. Any plan must be taught to the personnel who will be responsible for effecting it. This training must be ongoing because a mass casualty incident plan will not be effected every month or two. One key aspect of the teaching process is that the plan must be drilled through training exercises. These simulated multiple casualty events serve both to educate rescue personnel in disaster event management and to identify deficiencies in the plan that must be corrected. The only large scale Washington metropolitan region-wide disaster drill that has taken place in the last two years has been the simulated Metro tunnel fire that took place on 7 November 1982 and involved the District of Columbia and Arlington Fire Departments with mutual aid ambulances from neighboring jurisdictions. Unfortunately, when budgets get cut, training and continuing education programs are usually the first items to fall by the wayside. In order for a mass casualty response capability to retain its finely honed edge, the mass casualty response plan must be trained, taught, and drilled over and over again.

2) What improvements would you recommend with respect to transportation of victims from the site to the hospital?

There are two key aspects to victim transportation:

1. adequate vehicles and equipment for transport
2. sufficient communication between hospitals and the incident site to determine the hospital's capacity to handle types and numbers of injured.

Presently, the mutual aid pact in operation among jurisdictions of the Washington metropolitan area should provide adequate ambulance support for most multiple casualty incidents. Some incidents will require buses and vans to transport large numbers of "walking wounded." No mechanism currently exists for immediate 24 hour access of these vehicles. A resource list of available transportation equipment (Metro buses, Army vehicles, etc.) needs to be prepared and be accesible in a central location to those in charge of the region's disaster effort.

At present, the only communications system linking District of Columbia hospitals to the D.C. Fire Department is the Fire Department communications system which connects each hospital to the Communications center. The District of Columbia Hospital Association has devised a plan in which one hospital in the District of Columbia would serve as an information clearinghouse to collect information on patient care capability from all the District's hospitals and relay that information to the incident site. This idea of centralizing information on hospital capacities through one contact hospital is an excellent one and should reduce the spider's web of communication pathways that now exists. This plan has not yet been put into effect; no information clearinghouse hospital has been picked.

3) Can the communications system be improved?

The Washington D.C. metropolitan area has a VHF simplex channel available for Fire Department mutual aid (154.280). The current District of Columbia mass casualty plan calls for limiting the use of this channel to command level communications only. On the EMS side, all advanced life support units have access to "call channel one" a UHF duplex channel that can serve as an ambulance mutual aid channel. The current configuration of channels is adequate for mass casualty incident communication provided:

1. communications pathways that are to be used in a mass casualty incident are drilled by personnel beforehand

2. all key vehicles and personnel are equipped with radios that access the mutual aid channels

3. non-radio means of communications (bullhorns, runners) are used where possible to reduce the overload on radio channels.

4) How good is the COG study and action plan on "Emergency Preparedness in the Washington metropolitan area?"

The Council of Governments has developed an excellent study and "action plan" outlining the requirements and steps needed for a Washington metropolitan area regional disaster plan.

The individual jurisdictions of the region will produce their own internal mass casualty incident plans based on the COG template. These in turn will be integrated by COG into a region-wide plan. The success of this COG program will depend on whether each jurisdiction is willing to commit enough time, effort and money to the task. The study and action plan are excellent.

5) What should be the role of federal agencies in a local disaster?

The primary responsibility of responding to any mass casualty incident rests with local authorities. Federal agencies should be used to provide backup manpower (e.g., litter bearers) and equipment (buses, helicopters) to aid a disaster response. A ready reference list of potential resources, their locations, and their means of access needs to be developed and kept in the emergency command centers of the jurisdictions of the region.

The role of a physician on the scene of a mass casualty incident:

Certain types of mass casualty incidents need to have a physician on the scene of the incident; others do not. On-scene physicians are needed when:

1) there is an extensive incident in which victims remain at the disaster site for prolonged periods of time

2) special medical procedures need to be employed (e.g., amputation to extricate a victim).

In general, physicians have no expertise in on-scene management of a multiple casualty incident. "Just any" physician will not do. The physician who reports to the site of the mass casualty incident needs to be designated beforehand, have expertise in emergency management, be trained with the other rescue personnel in the specific protocols of the mass casualty incident plan, and participate in the drill simulations.

Other suggestions:

1. Multiple casualty incident vehicles are needed to bring rescue and medical equipment to the incident site.

   This transport vehicle needs to be fully stocked with disaster supplies for 50-75 victims. Without such a vehicle, there will be inadequate rescue equipment available. To my knowledge, no such vehicle exists now either in the District of Columbia or in suburban Maryland.

2. Each area Fire Department and Ambulance Service needs to appoint a full time Emergency Preparedness Coordinator who will be in charge of mass casualty incident planning and training.

   The amount of preparation, coordination, education and training that is necessary to get the job done right requires a full time coordinator in each jurisdiction. The time to organize a mass casualty incident response is before the incident occurs, not after.

Because of the unfortunate events of 13 January 1982, the Washington metropolitan area has had a heightened awareness of the need for mass casualty incident preparedness. With the proper commitment of time, effort, personnel and money, we have unique opportunity to make the disaster response program of the Washington metropolitan area a model for the rest of the country.

THE WASHINGTON HOSPITAL CENTER

TESTIMONY

for

SUBCOMMITTEE ON GOVERNMENTAL EFFICIENCY AND THE DISTRICT OF COLUMBIA

SENATE GOVERNMENTAL AFFAIRS COMMITTEE

March 17, 1983

Respectfully submitted,

FRANK L. BROWN, JR., M.D.

Director of Emergency Medicine
Washington Hospital Center

Chairman,
Subcommittee for Disaster Preparedness
District of Columbia Mayor's EMS Advisory Committee

Essentials in the Chain of Disaster Response

There are at least 5 essential elements in the chain of effective disaster response, as follows:

1. Notification and Alert
2. Incident Command and Control
    a) Land
    b) Air
3. Mobilization of Resources
4. Prehospital Emergency Medical Services (EMS) Response
5. Local/Regional Hospital Response

The integration of these 5 links into a coordinated exercise requires 3 systems, as follows:

1. Communications
2. Resources
    a) Manpower
    b) Equipment
3. Patient Care Capability
    a) Critically Ill/Injured
    b) Potentially Ill/Injured
    c) Walking Wounded/Worried Well
    d) Dead/Potentially Dead

Any system of effective disaster response must combine the aforementioned 5 elements and 3 systems into a functional unit in the interest of maximum community preservation.

It must also be recognized that regional (District of Columbia, Maryland and Northern Virginia) disaster preparedness is a three-tiered proposition that derives from:

1. The efficacy of the local jurisdiction's daily EMS health care delivery system with respect to communications, resources, and patient care.

2. The multidisciplinary creation of a concise mass casualty incident plan within each local jurisdiction. Such plans should include provisions for periodic systems checks and drill evaluations.

3. The compatible meshing of local jurisdiction plans to effect a regional plan. Such plans should specify guidelines to solve some of the commonly encountered inter-jurisdictional problems, (e.g. Who's in charge?, What level of response is indicated?, etc.)

The Effect of the Metropolitan Washington Council of Governments' (COG's) Report on Regional Disaster Preparedness

In response to the catastrophic events of January 13, 1982, COG established the Metropolitan Area Emergency Response Task Force. The mission of this task force was to examine the emergency response action and activities associated with the January 13th disasters, and to develop recommendations to strengthen regional emergency response capability. The subsequent report is submitted as exhibit 1 of this testimony.

The COG recommendations (exhibit 1) are a superb "first step" in regional disaster preparedness. They were created as a "common mold" by which each local jurisdiction is to create and/or modify its own mass casualty incident plan by January, 1984. The Action Plan for Implementation of the Metropolitan Emergency Response Task Force Report (exhibit 2) has been designed as a working document to implement COG's recommendations within the local jurisdictions and the region. The use of this "mold" will result in inherent compatibility between the local plans, thus facilitating the coordination of a regional plan under the auspices of COG's EMS Policy Committee.

The Need for an Effective Federal/Regional Forum to Accomplish the Objective of Regional Disaster Preparedness

It is important to reiterate the point that effective regional disaster response capability is predicated on a multi-tiered system, the foundation of which is the integrity of the daily EMS system. Adequate communications, resources and patient care capability are absolutely essential. Subsequent disaster preparedness engineering efforts may then be implemented to create the local, and regional plans, as well as the procedures for periodic drill evaluations and systems checks.

The creation of an effective system requires an enormous commitment of professional expertise and resources. I am convinced that the COG report represents a superb "first step" towards the achievement of coordinated, competent regional disaster preparedness. I only hope that these subcommittee hearings will result in the necessary level of federal resource commitment (manpower, equipment, finances) to make the "subsequent steps" necessary to make effective disaster preparedness in the Metropolitan Washington area a reality.

List of Exhibits

Exhibit 1

Report of the Metropolitan Emergency Response Task Force:
Recommendations to Strengthen
The Regional Emergency Response Capability
of the
Metropolitan Washington Area

Exhibit 2

Action Plan
for
Implementation of the
Metropolitan Emergency Response Task Force Report

PROPOSED
METROPOLITAN WASHINGTON EMERGENCY RESPONSE ACTION PLAN

JANUARY 1983

THIS ACTION PLAN IS BASED ON THE RECOMMENDATIONS OF THE EMERGENCY RESPONSE TASK FORCE AS APPROVED IN JUNE 1982 BY THE COG BOARD OF DIRECTORS

metropolitan washington
COUNCIL OF GOVERNMENTS

PROPOSED
METROPOLITAN WASHINGTON EMERGENCY RESPONSE ACTION PLAN

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PROPOSED
METROPOLITAN WASHINGTON EMERGENCY RESPONSE ACTION PLAN

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BACKGROUND

The Board of Directors of the Metropolitan Washington Council of Governments established a Metropolitan Emergency Response Task Force in February, 1982 in response to the events of January 13, 1982 when the Metropolitan Washington Area experienced a sequence of incidents which caused the mobilization of public safety resources throughout the region.

In June, 1982, the COG Board of Directors approved the Report and Recommendations of the Metropolitan Emergency Response Task Force and mandated the development of a comprehensive Action Plan to implement the recommendations it contained.

One-hundred (100) percent of the written and verbal responses received on the Task Force report have been favorable, and supportive of its recommendations.

In the late summer and early fall of 1982, COG staff prepared a draft Action Plan which has been refined and completed by the Committees and Subcommittees within the Public Safety Committee structure. Additionally, numerous other agencies and individuals, such as the hospital associations and representatives of the EMS community were consulted in the process of the Action Plan.

IMMEDIATE AND LONG TERM ACTION

The development of the Action Plan has been both complicated and strengthened by the strongly perceived need by area public safety and emergency services officials to take immediate, remedial action to resolve identified emergency response deficiencies and to also develop an action plan with long-term, lasting benefit in strengthening emergency responses by area local, state and federal and private agencies in the metropolitan area.

The need for immediate remedial action and the need for a lasting, coordinated plan for metropolitan emergency responses have been successfully combined in the development of the Action Plan. The basic objective of this combined effort was to assure that remedial actions taken to reduce the possible reoccurrence of problems which occurred in January, 1982 could be used as the basic building blocks for completion of the Action Plan. Much has been accomplished in this regard.

ACTION PLAN COMPLETION RESPONSIBILITY

To assure, to the extent possible, accountability for specific implementation in the plan, each of the 42 action elements and the tasks required to achieve those actions has a designated agency, organization or combination of entities responsible to assure the timely completion of the tasks and the related action elements.

ACTION PLAN TIMETABLE

The Action Plan presents a work program 19 months in duration (November 1982 - May 1984). The plan is organized so that all the basic actions required for the Metropolitan Emergency Response Plan will be completed by the end of calendar year 1983 when it will be presented to the COG Board of Directors for approval. The remaining five months in the Action Plan calendar will involve formalizing some elements of the plan; development of documentation for the annexes to the plan and completion of the initial multijurisdictional training which will assure the continued effectiveness of the plan in the future. The final action in the timetable will be the final approval of the full Metropolitan Emergency Response Plan and annexes by the COG Board of Directors in May 1984.

FISCAL IMPLICATIONS OF THE PLAN

The Action Plan requires a consolidated, multi-agency funding approach, which will unify resources of many types from a variety of agencies and organizations, as well as local, state and Federal government, toward the common goal of improved emergency management and response to disasters in the metropolitan Washington area.

It is not possible at this time to identify the specific and total costs to each agency and jurisdiction involved in implementing the Action Plan.

These agency and jurisdictional costs related primarily to equipment and material needs, and they will be reviewed through individual agency/jurisdictional budget processes as soon as the information is available through the implementation of the Action Plan.

At the regional level, the key to completing the Action Plan will be the time and expertise of area public safety professionals and funding for regional planning, coordination, training and drills. In addition to the crucial in-kind service support of area public safety professionals, and the assistance of an expert from FAA, it is anticipated that approximately $280,000 will be needed to complete the regional aspects of the proposed Action Plan.

At the present time, only the funds identified for this regional activity in COG's FY '83 and FY '84 budgets are available to carry out the Action Plan. Funding will be requested from relevant Federal and state entities to carry out the regional aspects of the plan.

In addition, regional costs and potential federal funding sources have been identified for Mutual Aid radio and hospital communications studies; and regional costs to actually conduct multi-jurisdictional disaster drills.

PROPOSED
METROPOLITAN WASHINGTON EMERGENCY RESPONSE ACTION PLAN

STATUS REPORT AND OVERVIEW

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STATUS REPORT AND OVERVIEW
OF THE PROPOSED METROPOLITAN WASHINGTON
EMERGENCY RESPONSE ACTION PLAN

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o INTRODUCTION

The Board of Directors of the Metropolitan Washington Council of Governments established a Metropolitan Emergency Response Task Force in February, 1982 in response to the events of January 13, 1982 when the Metropolitan Washington Area experienced a sequence of incidents which caused the mobilization of public safety resources throughout the region. A blinding snowstorm, early release of federal, state and local employees, a plane crash into the 14th Street Bridge and Potomac River and the derailment of a METRO train, during peak usage, provided circumstances which vigorously emphasized the need for regional disaster response, coordination, and cooperation.

The Task Force developed a structured set of 72 recommendations for strengthening the region's emergency response capabilities for mass casualty disasters such as the events of the 13th, as well as other serious disruptions to life, public order or safety which qualify equally as disasters.

In June, 1982, the COG Board of Directors approved the Report and Recommendations of the Metropolitan Emergency Response Task Force and mandated the development of a comprehensive Action Plan to implement the recommendations it contained.

In the late summer and early fall of 1982, COG staff prepared a draft Action Plan, which has been refined and completed by the Committees and Subcommittees within the Public Safety Committee structure. Additionally, numerous other agencies and individuals, such as the hospital associations and representatives of the EMS community were consulted in the process of preparing the Action Plan. This Status

Report and Overview serves as a companion document to the Action Plan which contains detailed tasks for implementation. It provides a synopsis or overview of the Action Plan and an estimate of related costs and fiscal considerations.

o SUPPORT FOR THE METROPOLITAN EMERGENCY RESPONSE CONCEPT

The June 1982 COG Board resolution calling for the development of an Action Plan for Implementation of the Task Force's Recommendations also called for the transmission of the Task Force Report to all the COG member jurisdictions, the Metropolitan Washington Congressional Delegation, the Mayor of the District of Columbia, the Governors of Virginia and Maryland, the U.S. Department of Transportation, the Federal Emergency Management Agency, the Washington Metropolitan Area Transit Authority, the Department of the Interior, and area hospitals and hospital associations, for the purposes of obtaining their review and formal endorsement.

One-hundred (100) percent of the written and verbal responses received on the report have been favorable, and supportive of the recommendations contained in the Task Force Report.

Specific written endorsements have been received from the following jurisdictions, offices and officials:

District of Columbia
Fairfax County
Montgomery County 3
Prince George's County 4
Arlington County 5
Prince William County 6
City of Alexandria 7
City of Bowie

Governor of the Commonwealth of Virginia
Governor of the State of Maryland
Mayor of the District of Columbia

Honorable Charles Mc. Mathias
Honorable Stan Parris
Honorable Michael D. Barnes

Department of Transportation
Federal Emergency Management Agency
Department of the Interior

Washington Metropolitan Area Transit Authority

D.C. Hospital Association
Saint Elizabeth's Hospital
Walter Reed Army Medical Center
Circle Terrace Hospital
Greater Southeast Community Hospital

o DEVELOPMENT OF THE ACTION PLAN

This Action plan represents the combined efforts over three months (September-November, 1982) of the Public Safety professionals in Metropolitan Washington. In addtion, the EMS orgaznizations which have worked to improve the provision of emergency health care services, and the hospital associations working on inter-hospital communication and coordination have been involved in developing pertinent segments of the Action Plan.

The Task Force Report approved by the COG Board of Directors included 72 recommendations for strengthening the region's ability to respond to emergencies and disasters. The Action Plan identifies proposed Actions for related redommendations, and specifies the Tasks which must be undertaken to complete each Action. In all 45 Actions are proposed to accomplish the Implementation effort.

Development of the Action Plan relied heavily on the leadership of local government public safety agencies through COG; however, because of the complexity of the region and the vast resources of the Federal and private sectors which are brought to bear in times of disaster, these areas were also involved.

The development of the Action Plan has been both complicated and strengthened by the strongly perceived need on the part of area public safety and emergency services officials, to take immediate, remedial action to resolve identified emergency response deficiencies and to also develop an action plan with long-term, lasting benefit in strengthening emergency responses by area local, state and federal and private agencies in the metropolitan area.

The need for immediate remedial action and the need for a lasting, coordinated plan for metropolitan emergency responses have been successfully combined in the development of the Action Plan. The basic objective of this combined effort was to assure that remedial actions taken to reduce the possible reoccurrence of problems which occurred in January, 1982 could be used as the basic building blocks for completion of the Action Plan. Much has been accomplished in this regard. The following representative listing of emergency response actions and accomplishments provide not only the immediate action required but also provide the under pinnings and momentum for the successful implementation of the Action Plan.

o PROGRESS ON REMEDIAL AND SUPPORTIVE ACTIONS IN THE REGION

A great deal has been accomplished in response to the Post Disaster Evaluation Report of Police Chief Maurice Turner and the COG Task Force Report that provides immediate remedy and supports the implementation of the Action Plan. A representative sample of these accomplishments includes the following:

- Extension of the Washington National Airport emergency operations secondary response area north to the Memorial Bridge, east to include the Potomac River and south to the Wilson Bridge.
- Development of a notification procedure for the early release of governmental employees in response to severe weather conditions in the Metropolitan Washington Area.
- Execution of a command and control exercise for a Potomac River Incident.

- Execution of a mid-river METRO Tunnel disaster drill for response to incidents in the METRO subway system.
- Standardization of disaster operational and testing procedures for mutual aid communications for police and fire.
- Coordination with jurisdictions outside Metropolitan Washington including parts of Pennsylvania for use of common mutual aid frequencies during disasters (tone code alert designation and procedures).
- Initial work on standardizing terminology for equipment, personnel, and procedures relative to disaster response.
- Work by area hospital associations and councils to develop a system for inter-hospital communication during disasters.
- Drafting of memorandum of agreement for use of mutual aid channels in disaster.
- Development of a mass casualty disaster plan by the District of Columbia.
- Initiation of disaster response management teams/disaster plan revisions in area local jurisdictions.
- Authorization for the Fairfax County Police Department to obtain and operate round-the-clock helicopter services (operational in April).
- Pilot testing of a multijurisdicitonal firefighter training module on coordinated responses.
- Pilot testing of a multijurisdictional training program for mid-level fire officers.
- Development of preliminary performance specifications for mobile command vehicles.
- Development of performance objectives for firefighter long-term breathing gear for responses to METRO incidents.
- Development of specifications for METRO emergency hand carts.
- Preliminary development of on-scene command and control identification procedures.
- Development of recommendations on METRO related disaster medical supplies.

o OVERVIEW OF THE ACTION PLAN

Organization:

The Action Plan, like the recommendations themselves, is divided into two Sections: Section I, Planning and Organization, and Section II, Emergency Disaster Response.

Section I, Planning and Organization, provides the overall metropolitan emergency response management focus for the Action Plan. This Section includes metropolitan planning; manpower and training; and mutual aid agreements. This central focus for action plan implementation begins with an initial assessment of the legal interrelationship between local, state, federal and private emergency response authorities and existing COG mutual aid agreements; provides for organization and monitoring of specific implementation actions; and provides for the final Metropolitan Emergency Management Response Plan and required training to assure that the Emergency Management Response Plan continues to work in the future.

Section II, Emergency Disaster Response, details the specific operational and logistical implementation actions. These actions are deeply rooted in daily emergency response operations that will be expanded and enhanced to reflect the organizational and resource complexity of metropolitan level emergency responses in the eight areas of recommendation by the Task Force.

Implementation Responsibility:

The many agencies and organizations in the metropolitan area with responsibilities for emergency response require a cooperative approach to the Action Plan. To assure, to the extent possible, accountability for specific implementation in the plan, each of the 42 action elements and the tasks required to achieve those actions has a designated agency, organization or combination of entities responsible to assure the timely completion of the tasks and the related action elements.

Implementation Timetable:

The Action Plan for Implementing the Recommendations presents a work program 19 months in duration (November 1982 - May 1984). The plan is organized so that all the basic actions required for the Metropolitan emergency response plan will be completed by the end of calendar year 1983 when it will be presented to the COG Board of Directors for approval. The remaining five months in the Action Plan calendar will involve formalizing some elements of the plan; development of documentation for for the annexes to the plan and completion of the initial multijurisdictional training which will assure the continued effectiveness of the plan in the future. The final action in the timetable will be the final approval of the full Metropolitan Emergency Response Plan and annexes by the COG Board of Directors in May 1984.

Conceptually, the Action Plan falls into five phases, including:

1. Operational Component Enhacement

   This phase which has been underway since the past-disaster evaluation reports were started, covers actions designed to strengthen operational management and coordination during emergency incidents.

2. Regional Plan Development

   This phase covers the formal organization of action elements into a regional plan.

3. Plan Formalization and Authorization

   This phase covers formal agreements by the various local, state, federal and private authorities for various aspects of the implementation actions.

4. Incident-specific Plan Annexation

   This phase covers the development of specific annexes to the metropolitan emergency response plan.

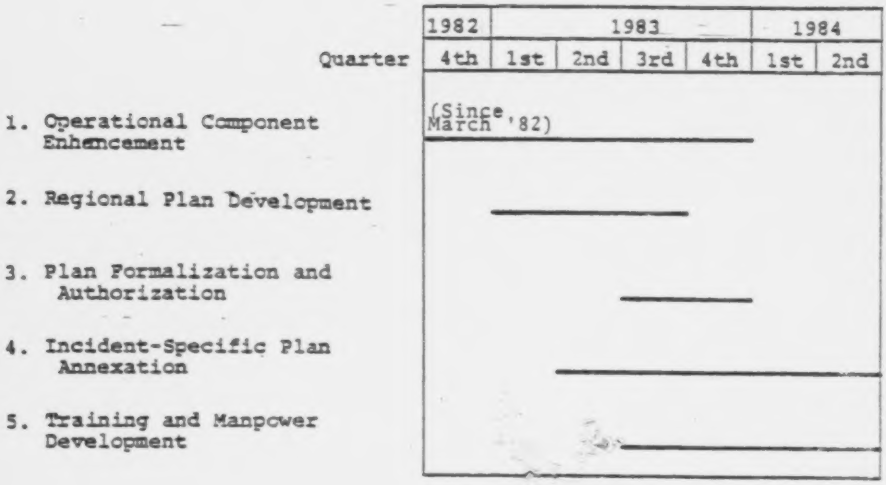
5. Training and Manpower

   This phase covers the development of training programs to provide the continuing familiarization and management training necessary to assure that the metropolitan plan remains the viable and accepted plan for emergency responses in the future.

Exhibit 1 provides an overview of these general phases of Action.

EXHIBIT 1

General Phases of Action Plan



Completion Dates for the Action Plan

The organizational structure of the COG Task Force recommendations provided the organization for the Action Plan. For purposes of providing an overview of the completion dates in the Action Plan, Exhibit 2 presents Action Plan completion dates by month. Exhibit 3 presents Action Plan completion dates within the overall context of the Action Plan structure.

EXHIBIT 2

Completion Dates for Action Plan Implementation by Calender Month

November 1982

- o Determined that it is not feasible to free the fire mutual aid frequency for the metropolitan Washington area.
- o Drafted a communications procedures protocol covering the use of mutual aid communications in a disaster situation.
- o Established a Formal Fire Mutual Aid Radio Disaster Notification Procedure.

December 1982

- o Determined preliminary needs for relevant local, state and federal units regarding mutual aid communications equipment.

January 1983

- o Draft a formal memorandum of agreement on the general use of PMARS, FMARS and Channel 1 EMS Communications in a disaster situation.
- o Adopt a communications procedures protocol covering the use of mutual aid communications in a disaster situation.
- o Modify current FMARS procedures to include testing of the twotone notification for disaster.

February 1983

- o Draft a position regarding the use of GP2200 civil defense phone capacities in relation to disaster communications.
- o Identify deficiencies in availability of mobile command vehicles to respond to moderate and major scale disasters.
- o Adopt plan to ensure delegation of authority for emergency medical care at the scene.

March 1983

- o Adopt a provisional agreement on the use of mutual aid channels for notification and alert.

- Draft a "change of command" protocol.
- Adopt a formal fire mutual aid radio disaster notification procedure.
- Initiate development of disaster linkages between hospitals and military hospitals.

April 1983

- Select a consultant to conduct a technical study of mutual aid communications networks.
- Draft regional communications specifications for mobile command vehicles.

May 1983

- Draft language for the delegation of authority under mutual aid.
- Draft a memorandum of agreement for all local, state, federal agencies potentially involved in command post operations.
- Adopt a formal memorandum of agreement on the general use of mutual aid communications in a disaster situation.
- Adopt regional communications specifications for mobile command vehicles.

June 1983

- Draft amendments to establish US Park Police, Maryland State and Virginia State police as members of the mutual aid agreements.
- Draft description of the roles and responsibilities of tri-state agencies in mutual aid situations.
- Finalize the position regarding the use of GP2200 Civil Defense capacities in disaster communications.
- Draft standardized regional procedures and protocols for primary triage and treatment at the scene of a disaster.
- Draft a uniform color code and placement system at the scene of a disaster incident.
- Draft a uniform system for identifying command personnel at the scene of an incident.

July 1983

- Draft a Metropolitan Emergency Management Plan
- Complete guidelines for command of on-site disaster response, based on type of incident.
- Establish a provisional agreement among all local, state and federal agencies with emergency resources that can be mobilized for regional disaster.
- Draft a senior and middle-level management familiarization program for operational and communications personnel.
- Adopt a "Change of Command" protocol.

August 1983

- Draft a system to insure appropriate deployment of physician support to the scene of a disaster.
- Draft a regional network for alert, notification and deployment of physicians to a disaster site.
- Adopt a uniform color code and placement system to identify key command and control locations at the scene of an incident.

September 1983

- Draft a Disaster Authority section in the metropolitan plan.
- Develop and initiate training programs for fire personnel.
- Establish schedule for fire related disaster drills.
- Pilot physician familiarization program for command and control.
- Establish standard notification procedure for area hospitals.
- Develop a command and control plan for air response to disaster in metropolitan Washington.

October 1983

- Specify formal authority of the District of Columbia and Maryland regarding emergency response to incidents in the Potomac river.

- Formalize ability for interdisciplinary requests for mutual aid.
- Finalize memorandum of agreement on the use of mutual aid channels for notification and alert.
- Implement procedures and protocols for primary triage and treatment at the scene of a disaster.
- Adopt a formal agreement among local, state and federal agencies potentially involved in command post operations.
- Establish a schedule for law enforcement related disaster drills.
- Establish a senior and middle-level management familiarization program for operational and communications personnel.

December 1983

- Adopt a Metropolitan Emergency Management Plan.
- Draft Emergency Communications Management Annex.
- Formally add US Park Police, Maryland State and Virginia State Police in the mutual aid agreements.
- Formalize roles and responsibilities of tri-state agencies in mutual aid situations.
- Adopt a formal signed memorandum of agreement among all local, state and federal agencies with emergency resources that can be mobilized for regional disasters.
- Final adoption of a uniform system for identifying command personnel on the scene through a multiagency memorandum of agreement.
- Install direct telephone lines.
- Complete technical study of PMARS, FMARS, and MARNIS equipment and performance and make recommendations on improvements and expansion of MARNIS capability.
- Complete a dedicated and redundant network for communciation among and between area hospitals for use in coordinating the overall medical community in its response to moderate and major disasters.

January 1984

- Adopt Emergency Communications Management Annex.
- Adopt Disaster Authority Section to the Plan.

- Adopt system to insure appropriate deployment of physician support to the scene of a disaster.
- Implement regional network for alert, notification and deployment of physicians to the disaster site, for purposes of on-scene medical treatment.
- Complete installation of METRO underground communications system.
- Complete disaster linkages, as appropriate with military hospital resources.

February 1984

- Draft an Airport Emergency Response Annex.
- Adopt a Disaster Resources and Resource Deployment Section in Metropolitan Plan.

March 1984

- Initiate law enforcement related training programs.

May 1984

- Adopt Airport Emergency Response Annex.
- Adopt METRO rail emergency response annex.
- Complete standardized terminology, disaster classifications and procedures in regional emergency management plan.
- Completion of work plan.

Exhibit 3

- TIMELINES FOR COMPLETION OF ACTIONS IN THE FOLLOWING AREAS:

I. Planning and Organization

Metropolitan Planning Recommendations

Training and Manpower Development Recommendations

Mutual Aid Agreement Recommendations

II. Emergency Disaster Response

Notification and Alert Recommendations

General Nature of Response to Disaster Recommendations

Mobilization of Resources Recommendations

Pre-Hospital EMS Response Recommendations

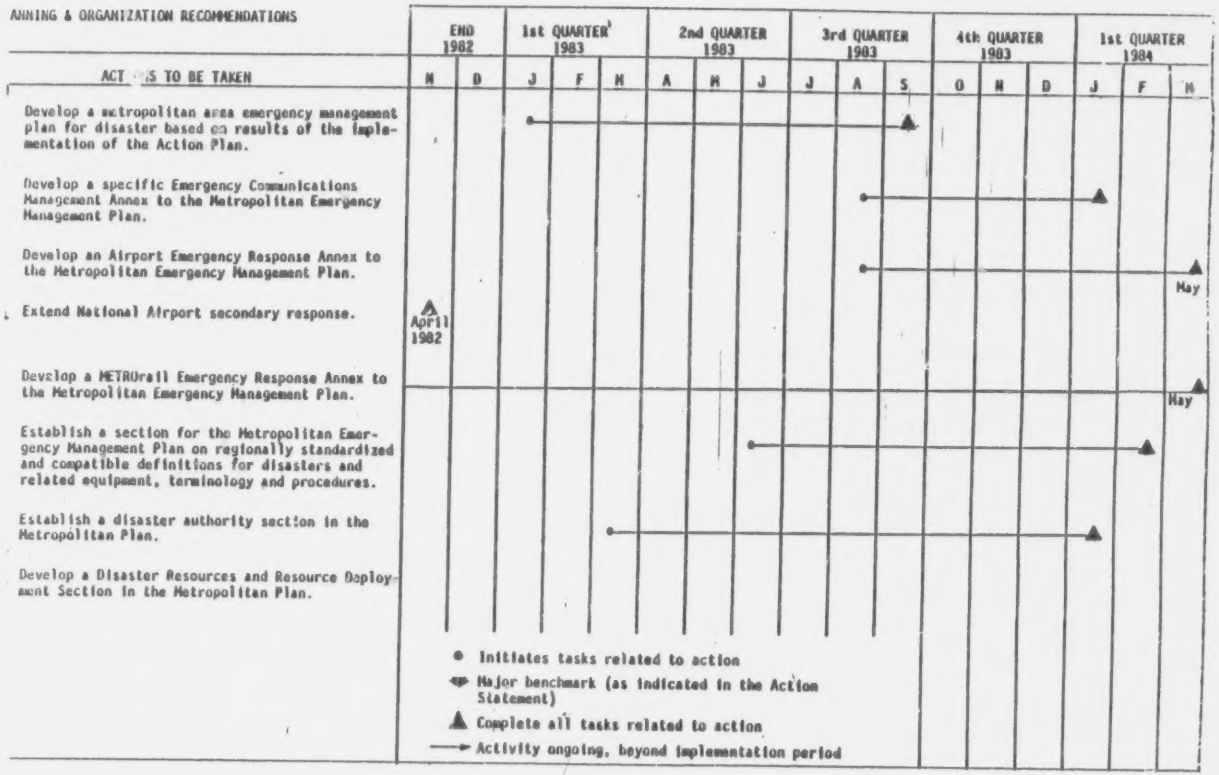
Incident Command and Control Recommendations

Air Response Command and Control Recommendations

Communications Recommendations

Regional Hospital Response Recommendations

ANNING & ORGANIZATION RECOMMENDATIONS



ACTIONS TO BE TAKEN

- Develop a metropolitan area emergency management plan for disaster based on results of the implementation of the Action Plan.
- Develop a specific Emergency Communications Management Annex to the Metropolitan Emergency Management Plan.
- Develop an Airport Emergency Response Annex to the Metropolitan Emergency Management Plan.
- Extend National Airport secondary response.
- Develop a METROrail Emergency Response Annex to the Metropolitan Emergency Management Plan.
- Establish a section for the Metropolitan Emergency Management Plan on regionally standardized and compatible definitions for disasters and related equipment, terminology and procedures.
- Establish a disaster authority section in the Metropolitan Plan.
- Develop a Disaster Resources and Resource Deployment Section in the Metropolitan Plan.

● Initiates tasks related to action

◆ Major benchmark (as indicated in the Action Statement)

▲ Complete all tasks related to action

→ Activity ongoing, beyond implementation period

Exhibit 3-a

WER & TRAINING RECOMMENDATIONS

ACTIONS TO BE TAKEN	END 1982		1st QUARTER 1983			2nd QUARTER 1983			3rd QUARTER 1983			4th QUARTER 1983			1st QUARTER 1984		
	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
Develop and initiate training programs (▼) for public safety personnel in the region.			●								▼						→
Establish a routine schedule of drills to exercise disaster plans and provide experience for revision of plans (▼).					●						▼		▼				→
Establish familiarization program based on the performance criteria and functions of the Command Physician and the Physician Response Teams.								●							▲		→

● Initiates tasks related to action

▼ Major benchmark (as indicated in the Action Statement)

▲ Complete all tasks related to action

→ Activity ongoing, beyond implementation period

Exhibit 3-b

MUTUAL AID AGREEMENTS RECOMMENDATIONS	END 1982		1st QUARTER 1983			2nd QUARTER 1983			3rd QUARTER 1983			4th QUARTER 1983			1st QUARTER 1984		
ACTIONS TO BE TAKEN	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
I. Draft, review and approve language in mutual aid operational plans specifying authority. (◆ Adoption of Provisional Procedure)		●	—	—	—	—	—	—	◆	—	—	▲					
II. Establish USPP as formal member of the Police and Fire Mutual Aid Agreements. (◆ Draft, Provisional Amendment)	●	—	—	—	—	—	—	◆	—	—	—	—	—	▲			
II. Draft, review and approve language providing for delegation of authority in Mutual Aid operations plans.		●	—	—	—	—	—	—	—	—	—	▲					
IV. Establish appropriate language in the Police and Fire Mutual Aid Operational Plans to include requests for aid from police to fire or fire to police among jurisdictions.	—	—	—	—	—	—	—	—	—	—	—	▲					
V. Establish appropriate language defining the emergency response role and responsibilities of MAM, WMATA and USPP in mutual aid situations.. (◆ Final Draft Completed for External Review)		●	—	—	—	—	—	◆	—	—	—	▲					

● Initiates tasks related to action

◆ Major benchmark (as indicated in the Action Statement)

▲ Complete all tasks related to action

→ Activity ongoing, beyond implementation period

Exhibit 3-c

NOTIFICATION AND ALERT

	END 1982		1st QUARTER 1983			2nd QUARTER 1983			3rd QUARTER 1983			4th QUARTER 1983			1st QUARTER 1984		
ACTIONS TO BE TAKEN	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
I. Develop a formal Memorandum of Agreement for signature by all local, State and Federal agencies with mutual aid radio capabilities. (◆ DRAFT)			◆	—	—	—	—	—	—	—	—	▲					
II. Formally transmit for signature this officially approved position to all local, State and Federal agencies in the Metropolitan Area with GP 2200 Civil Defense phone capacities.			◆	—	—	—	—	▲									
III. Establish standard notification procedure for area hospitals.			●	—	—	—	—	—	—	—	▲						

● Initiates tasks related to action

◆ Major benchmark (as indicated in the Action Statement)

▲ Complete all tasks related to action

→ Activity ongoing, beyond implementation period

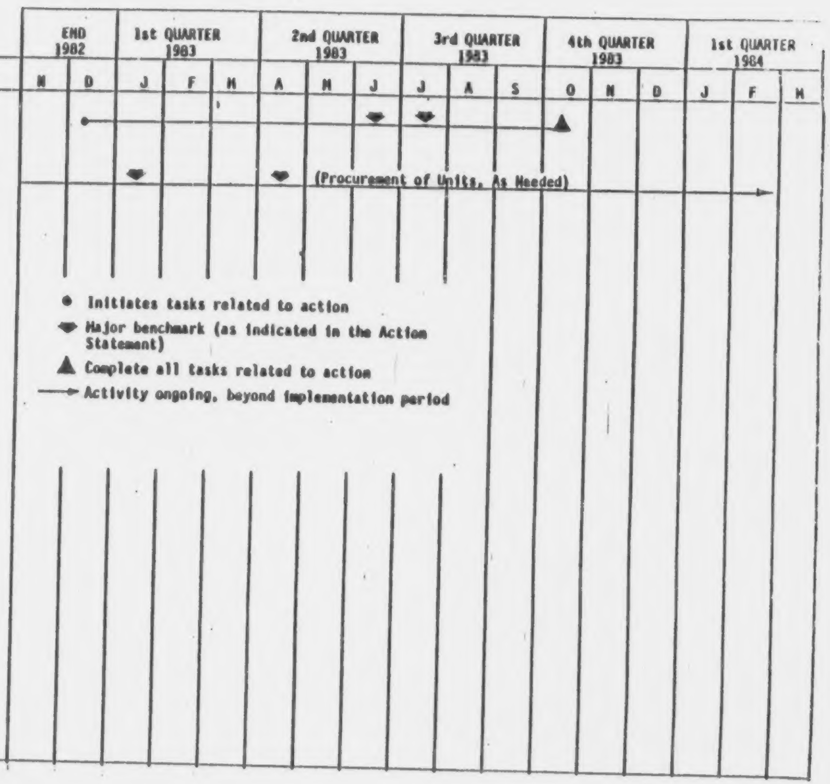
Exhibit 3-d

NERAL NATURE OF RESPONSE TO DISASTER

ACTIONS TO BE TAKEN

Develop guidelines for command of on-scene disaster response, based on incident type. (◆ Local adoption)

Insure that mobile command vehicles are available for response to moderate and major scale disasters. (◆ Draft ... complete needs assessment)



- ● Initiates tasks related to action
- ◆ Major benchmark (as indicated in the Action Statement)
- ▲ Complete all tasks related to action
- → Activity ongoing, beyond implementation period

Exhibit 3-e

BILIZATION OF RESOURCES

ACTIONS TO BE TAKEN	END 1982		1st QUARTER 1983			2nd QUARTER 1983			3rd QUARTER 1983			4th QUARTER 1983			1st QUARTER 1984		
	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
1. Establish a formal signed Memorandum of Agreement among all local, State and Federal agencies with emergency resources that can be mobilized for regional disasters. (◆ local adoption)	●	—	—	—	—	—	—	◆	—	—	—	—	—	—	▲		

- ● Initiates tasks related to action
- ◆ Major benchmark (as indicated in the Action Statement)
- ▲ Complete all tasks related to action
- ⟶ Activity ongoing, beyond implementation period

Exhibit 3-f

EHOSPITAL EMERGENCY MEDICAL SERVICE RESPONSE

	END 1982		1st QUARTER 1983			2nd QUARTER 1983			3rd QUARTER 1983			4th QUARTER 1983			1st QUARTER 1984		
ACTIONS TO BE TAKEN	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
Establish a system within the overall disaster management plan to insure delegation of authority for emergency medical care at the scene to an appropriately certified pre-hospital care responder.		●	▲														
Develop system to insure appropriate deployment of physician support to the scene of a disaster.							●	—	—	—	—	—	—	—	▲		
Standardize the regions' procedures and protocols for primary triage and treatment at the scene of a disaster.			●	—	—	—	—	—	—	—	—	▲					
Establish regional network for alert, notification and deployment of physicians to the disaster site, for purposes of on-scene medical treatment.								●	—	—	—	—	—	—	▲		

● Initiates tasks related to action

◆ Major benchmark (as indicated in the Action Statement)

▲ Complete all tasks related to action

→ Activity ongoing, beyond implementation period

Exhibit 3-q

NCIDENT COMMAND AND CONTROL

ACTIONS TO BE TAKEN	END 1982		1st QUARTER 1983			2nd QUARTER 1983			3rd QUARTER 1983			4th QUARTER 1983			1st QUARTER 1984		
	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
. Establish a uniform Color Code and Placement System to identify key command and control locations at the scene of an incident for all local, State and Federal emergency services. (◆ Local Adoption)		●						◆						▲			
I. Establish a uniform system for identifying command personnel on the scene through a multi-agency memorandum of agreement. (◆ Local Adoption)		●						◆				▲		→			
I. Establish a senior and middle-level management familiarization program for operational and communications personnel.					●						▲		→				
V. Establish a "Change of Command" Protocol. (◆ Local Adoption)					●			◆						▲			
V. Establish a formal signed Memorandum of Agreement among all local, State and Federal agencies with emergency services potentially involved in command post operations.				●								▲					

● Initiates tasks related to action
◆ Major benchmark (as indicated in the Action Statement)
▲ Complete all tasks related to action
→ Activity ongoing, beyond implementation period

Exhibit 3-h

ION PLAN FOR AIR RESPONSE COMMAND & CONTROL

ACTIONS TO BE TAKEN	END 1982		1st QUARTER 1983			2nd QUARTER 1983			3rd QUARTER 1983			4th QUARTER 1983			1st QUARTER 1984		
	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
Develop a command and control plan for air response to disaster in Metropolitan Washington.			●		Preliminary Report ⬥						▲						

- ● Initiates tasks related to action
- ⬥ Major benchmark (as indicated in the Action Statement)
- ▲ Complete all tasks related to action
- ⟶ Activity ongoing, beyond implementation period

Exhibit 3-i

CTION PLAN FOR COMMUNICATIONS

ACTIONS TO BE TAKEN

I. Establish a formal Memorandum of Agreement on the general use of PMARS, FMARS and Channel 1 EMS Communications in a disaster situation.

II. Install direct telephone lines.

II. Complete installation and enhance performance capability of METRO underground communications system.

IV. Explore feasibility of freeing the Fire Mutual Aid Frequency for the Metropolitan Washington Area.

V. Assure all relevant local, State and Federal units have the recommended equipment. (➧ needs assessment)

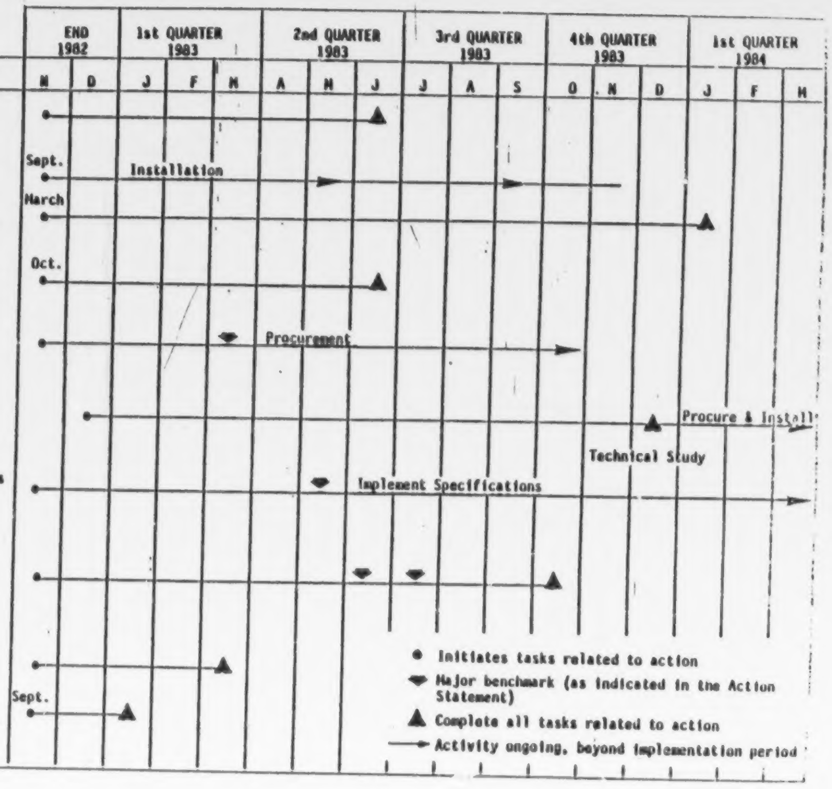
VI. Conduct a Technical Study of PMARS, FMARS and MARNIS equipment and performance and make recommendations on improvements and expansion of MARNIS capability.

II. Establish regional communications specifications for mobile command vehicles and purchase necessary equipment. (➧ complete specifications)

VIII. Develop a communications procedures protocol covering the four key areas of recommendation for inclusion in the Memorandum of Agreement on the use of mutual aid communications in a disaster situation. (➧ local adoption)

IX. Establish a formal fire mutual aid radio disaster notification procedure.

X. Modify current FMARS testing procedures to include testing of the two-tone disaster notification.



● Initiates tasks related to action
➧ Major benchmark (as indicated in the Action Statement)
▲ Complete all tasks related to action
→ Activity ongoing, beyond implementation period

Exhibit 3-j

REGIONAL HOSPITAL RESPONSE

ACTIONS TO BE TAKEN	END 1982		1st QUARTER 1983			2nd QUARTER 1983			3rd QUARTER 1983			4th QUARTER 1983			1st QUARTER 1984		
	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
I. Develop a dedicated and redundant network for communication among and between area hospitals for use in coordinating the overall medical community in its response to moderate and major disasters.					●									▲			
II. Develop disaster linkages, as appropriate with military hospital resources. [Additional hospital-related actions for mobilizing physicians are addressed under Emergency Medical Service Prehospital Response and under Manpower and Training.]					●										▲		

● Initiates tasks related to action

◆ Major benchmark (as indicated in the Action Statement)

▲ Complete all tasks related to action

→ Activity ongoing, beyond implementation period

Exhibit 3-k

o FISCAL IMPLICATIONS OF IMPLEMENTATION

The proposed funding plan for the implementation of the Emergency Response Task Force Report is detailed in Exhibits 4 and 5. It is a consolidated, multi-agency funding approach, which will unify resources of many types from a variety of agencies and organizations, as well as local, state and Federal government, toward the common goal of improved emergency management and response to disasters in the metropolitan Washington area.

It is not possible at this time to identify the specific and total costs to each agency and jurisidction involved in implementing the Action Plan. There are two reasons for this:

1- There are differences in the types and amounts of disaster response equipment already possessed by area jurisdictions; and

2- There are several tasks in the Action Plan that must be completed before individual jurisdiction or agency costs can be specified (i.e., determination of numbers and types of units needed, and development of specifications where none currently exist).

These costs relate primarily to equipment and material needs, and they will be reviewed through individual agency/jurisdictional budget processes as soon as the information is available.

At the regional level, the development of the proposed Action Plan has brought fiscal considerations into sharper focus. The key driving force to complete the proposed Action Plan will be the time and expertise of area public safety professionals and funding for regional planning, coordination, training and drills. In addition to the crucial in-kind service support of area public safety professionals, and the assistance of an expert from FAA, it is anticipated that approximately $280,000 will be needed to complete the regional aspects of the proposed Action Plan.

In addition, regional costs have been identified for Mutual Aid radio and hospital communications studies and regional costs to actually conduct multi-jurisdictional disaster drills. Exhibits 4 and 5 identify the proposed Federal and state entities who will be requested to provide funding to carry out the regional aspects of the plan. As noted on page 27, specific implementation costs by jurisdiction and agency will become available through the implementation of the Action Plan.

At the present time, only the funds identified for this activity in COG's FY '83 and FY '84 budgets are available to carry out the Action Plan. Exhibit 5 identifies a 24-month funding time period to reflect the costs of developing the Action Plan. COG funds identified were utilized for this effort. The early availability of additional financial resources for the metropolitan level effort is crucial if the Action Plan timetable is to be maintained.

- PROPOSED -

METROPOLITAN WASHINGTON EMERGENCY RESPONSE ACTION PLAN

FUNDING SOURCES

	COG	LOCAL JURISDICTIONS	FEDERAL AGENCIES					STATE JURISDICTIONS			AREA HOSPITALS (A) & ASSOCIATIONS (B)	
			DOT									
			FAA	NHTSA	DHH/PHS	FEMA	INTERIOR	DC STATE	MD STATE	VA STATE		[illegible]
DING FOR METROPOLITAN PLANNING AND ORDINATION STAFF, TO ADDRESS IONAL RECOMMENDATIONS, INCLUDING:												
Regional Emergency Management Plan Development;	FY '83 - $41,777 FY '84 - $45,000	In-Kind	10,000	10,000		20,000	10,000	10,000	10,000	10,000	In-Kind and Budget A	In-K
Development of Specific Procedures as Identified in the Task Force Recommendations;	FY '83 & FY '84 Budgets	In-Kind	TDY FAA Expert 5,000	10,000		10,000	5,000	In-Kind	In-Kind	In-Kind	In-Kind	In-K
Coordination of Regional Disaster Drills.	FY '83 & FY '84 Budgets	In-Kind	10,000	5,000	-0-	20,000	In-Kind	5,000	5,000	5,000	In-Kind	In-K
DING FOR IMPLEMENTATION OF CIFIED STUDIES.		In-Kind	In-Kind		Hospital Communications 10,000	Communications 45,000		In-Kind	In-Kind	In-Kind	In-Kind (A&B)	[illegible]
DING FOR PURCHASE OF IDENTIFIED IPMENT.		Local Budgets	Budget		-0-	Communications; funding for Jurisdictions based on consultant		Budget Cycle	State Budget	State Budget	Budget (A&B)	[illegible]
DING FOR REGIONAL TRAINING AND ILS.	FY '83 & FY '84 Budgets	In-Kind	In-Kind		20,000	40,000		In-Kind	In-Kind	In-Kind	In-Kind	In-K

Exhibit 4

- PROPOSED -

METROPOLITAN WASHINGTON EMERGENCY RESPONSE ACTION PLAN FUNDING
July 1982 - June 1984
(24 Months)

Funding for Regional Planning, Coordination, Training and Drills:

Source	Amount
• COG (Approved FY '83 & Proposed FY '84 Budgets	$ 86,777
• FAA	25,000
• NHTSA	25,000
• FEMA	90,000
• Interior	15,000
• DC (State)	15,000
• VA (State)	15,000
• MD (State)	15,000
	$286,777

Average cost per month: ~~$12,468.56~~

$11,000, plus

In-Kind Contributions in the Form of Time and Expertise

Type	Amount	Source
• Jurisdictional members serving on Police and Fire Subcommittees working on the Action Plan	10 hours per month per member for at least the initial 12 months	local jurisdictions
• Expertise in Emergency Helicopter Operations/ Communications	On-Loan for six months	FAA

EXHIBIT 5

Funding for Regional Consultant Studies:

Study	Funding	Administration	Source
• Mutual Aid Radio Communications	$45,000	COG	FEMA
• Hospital Communications	10,000	COG	US DHHS/PHS

Funding for Purchase of Equipment:

Equipment	Amount	Source
• Mutual Aid Communications	to be determined by study	FEMA
• Other Equipment	to be determined	Jurisdictional Budget

Funding for Actual Training/Drills

Amount	Source
$40,000	FEMA
20,000	US DHHS/PHS

EXHIBIT 6

STATEMENT OF THOMAS M. HAWKINS
FIRE CHIEF, ARLINGTON COUNTY, VIRGINIA

BEFORE THE SUBCOMMITTEE ON GOVERNMENTAL EFFICIENCY AND
THE DISTRICT OF COLUMBIA
U. S. SENATE

March 17, 1983

Senator Mathias and members of the committee, it is a pleasure to testify before you today. I am Thomas Hawkins, Fire Chief, Arlington, Virginia. I am here representing Arlington to provide you with information regarding our Disaster Response.

Arlington is fortunate because the Police and Fire Departments work closely together and have a mutual respect for each others job. Our combined Emergency Communications Center allows for Police/Fire coordination. This includes the emergency medical response because it is part of the Fire Department. On scene coordination is effectively accomplished because each agency knows the types of incidents for which it is responsible.

The command and control of an incident is necessary, but diffucult. If an incident occurs close to political boundary the responsible jurisdiction would coordinate the resource requirements. As local resources are depleted or specialized, equipment is required, Fire or Police mutual aid agreements would be enacted. Also, assistance is available from the Commonwealth's Office of Emergency Preparedness.

Incoming resources must report to either the command post or staging area. Normally, the staging area will be designated with a command officer in charge. Localities must not send units until the controlling jurisdiction requests the aid.

The Washington Metropolitan area is blessed with a wealth of experienced Fire and Police officials with the resources available. I believe, we can cope with any disaster which is in the realm of human capability, but if a tank car turns over and releases a highly toxic gas, it may not be humanly possible to stop the leak prior to its reaching populated areas.

Resources needed to cope with expected disasters are an interesting question. I would address this not from a nuts and bolts perspective, but from a conceptual point.

- Assistance must be given in developing technologies that could be used to minimize the event. For example, computer base information system should be available on the command vehicle. It would provide information that may be forgotten or lost in the excitement of the event. On site television could be used to cover the incident scene and send signals back to command post. Hospitals could monitor disaster scenes through a television system. This enhanced communication may provide the necessary information from inaccessible points.

- Financial assistance to provide for command vehicles and heavy duty rescue squads. The squad trucks would carry various types of equipment for rescue of trapped or distressed victims.

- Assistance is needed in gaining radio frequencies for public safety use during a disaster.

- Legislation is needed to reduce the potential of civil liability of personnel responding across State boundaries during an incident.

Federal agencies can be of assistance during a disaster eventhough local officials have the responsibility and control. They should respect that responsibility unless there is a legal reason for taking command. Federal officials must report to the local commander and provide necessary advice. Also, advisors must remember that theirs is a specific role which should not be confused with making command decisions.

Thank you for the opportunity to testify. Arlington will cooperate with any endeavor to insure public safety.

Testimony of Harry H. Shaffer, Assistant Fire Chief, Operations, before the Senate Subcommittee on Governmental Efficiency and the District of Columbia

Mr. Chairman and Members of the Subcommittee:

I am Harry H. Shaffer, Assistant Fire Chief Operations of the District of Columbia Fire Department. I am pleased to be here today to testify on behalf of Fire Chief Theodore R. Coleman concerning our response to major emergencies occurring within the District of Columbia and our coordination with public safety officials of other jurisdictions.

When emergencies occur within the District of Columbia the coordination of fire suppression units, rescue squads, basic life support units and advanced life support units begins with the initial dispatch. Fire suppression, rescue, and emergency medical assistance are all the responsibility of the Fire Department and units are dispatched by the Communications Division of the Fire Department. Coordination at the scene is a function of the senior fire official on the scene who is the incident commander. The Metropolitan Police Department is notified, by the Fire Department dispatcher utilizing the direct line to their communication section, of all dispatches for the report of fires. The Metropolitan Police Department responds in accordance with their rules for dispatch and if their pressence is needed at the scene of an emergency to which they have not responded the incident commander will request their presence. Should the emergency involve a large number of casualties the provisions of the Mass Casualty Incident Plan will be followed. The Mass Casualty Incident Plan, a copy of which is attached, was developed to provide for the expeditious handling of large numbers of injured persons. The plan was tested at the Metrorail Incident exercise conducted on November 7, 1982 and revised. The overall coordination of all units responding to any emergency is carried out at the Command Post established near the scene.

Frequently emergencies occur on or near jurisdictional boundaries. Responsibility for an incident rests with the jurisdiction in which it occurs. When District of Columbia Fire Department units respond to an incident which is found to be in another jursidiction they yield to the public safety officials of the jurisdiction in which the incident has occurred. If units from that jurisdiction have not yet arrived, the District of Columbia units will take whatever action is indicated by the nature of the incident until units from that jurisdiction arrive.

The District of Columbia has entered into mutual aid agreements with all of the surrounding jurisdictions and the resources of these jurisdictions are available as needed. This could be anything from fire suppression units to a single specialized unit such as a hazardous materials response team. The response of the surrounding jurisdictions to requests for mutual aid have been satisfactory.

The District of Columbia Fire Department is prepared to respond to emergencies involving fire, structural collapse, transporation accidents and to calls for emergency medical assistance. The Department as yet has not been called upon to respond to a serious radiological or hazardous material incident. Also, we have not yet experienced a serious fire in the metrorail system. In order to be prepared to handle a serious radiological incident additional training is needed and our radiological monitoring instruments need to be reviewed to determine if they are adequate in light of the current state of the art. Training and equipment is needed in order to place a hazardous material response team in service. Until this is accomplished our ability to handle incidents involving hazardous materials is limited. The Department is also in need of a Command/Communications Vehicle and an Emergency Medical Supply Delivery Vehicle. A vehicle has been obtained which will be equipped for use as a Command/Communication Vehicle but as of this time no vehicle has been located which will be suitable for the delivery of emergency medical supplies to the scene of a mass casualty incident.

Following the events which occurred on January 13, 1982, the Metropolitan Washington Council of Governments appointed the Metropolitan Emergency Response Task Force to prepare recommendations to improve the region's emergency management and response capabilities. The Council of Governments Fire Chiefs committee appointed a subcommittee of senior operations officers to ensure that the recommendations of the Task Force were implemented. The subcommittee has been working diligently towards this objective and also the development of an Operational Plan, sufficiently generic in nature, that it may be used by both Police & Fire Departments. Regardless of the final product, whether a single plan or separate plans for Police and Fire, the development of the plan is being carefully coordinated with all public safety officials and the D.C. Office of Emergency Preparedness to ensure compatibility.

As previously mentioned, the District has never experienced a serious radiological or hazardous material incident. Should an incident of this type occur, federal assistance would be needed and requested. Also, a serious transportation accident such as a plane crash would require the presence of federal officials as well as highway or rail incidents involving hazardous materials.

I would like to thank the subcommittee for affording the Fire Department the opportunity to express its views.

MASS CASUALTY INCIDENT (MCI) PLAN OF OPERATIONS

(DRAFT)

I. Introduction

Any medical emergency which overwhelms the resources, abilities, equipment, and facilities of available personnel could be deemed a mass casualty incident. Other factors as weather, location, and terrain may also be involved in making a determination that a mass casualty incident (MCI) exists.

This operational plan shall be employed when:

1) the number of patients and the nature of their injuries make the _normal_ level of stabilization and care unachievable; and/or

2) the number of emergency medical personnel and ambulances that can be immediately brought to the scene of the emergency is insufficient to achieve the normal level of patient care.

In making a determination that a mass casualty incident exists, the quantity of personnel and other resources _ultimately_ available is insignificant. Only those available within a short period of time are of value. If this quantity is below the requirement of the incident for a normal level of patient stabilization, _qualitative_ changes in method and structure must be employed. In such cases, the "MCI Plan" presents a general method that is applicable to any mass casualty situation, and relies on the training and knowledge of responding personnel to apply and adjust the "Plan" to the specific incident involved.

II. Command and Operational Structure

A. Incident Commander

Effective control of any large scale incident, and certainly a mass casualty incident, must start with the designation of a single individual as the on-the-scene "Incident Commander" who is responsible for the management of all manpower, equipment, and all strategic decisions at the scene of the emergency.

The Incident Commander will establish

a. Command Post as a base of all operations; firefighting, rescue, and medical. Any and all requests for assistance on the scene of the incident must be made by the Incident Commander or his designee.

In order to maintain an effective "span of control, the Incident Commander will designate specific "sectors", or areas of operations, as needed. Each sector will have a designated "Sector Commander".

The Incident Commander, (radio designation, "Command Post") will be identified by a florescent yellow vest with "Incident Commander" printed front and rear.

B. Medical Operations Officer

To coordinate all medical operations and sectors at the scene of the emergency, the Incident Commander will designate a "Medical Operations Officer". Physically located at the Command Post, and subordinate to the Incident Commander, the Medical Operations Officer will assign a Sector Commander and personnel to each of the various medical sectors as herein described.

The Medical Operations Officer (radio designation, "Med Ops") will coordinate the requirements of all medical sectors with the Incident Commander, including requests for physician/RN response to the scene.

For maximum utilization of personnel on the scene, the Incident Commander will designate a Firefighting Officer as the Medical Operations Officer, pending the arrival of an Emergency Ambulance Division Supervisor or Director, as approved by the Incident Commander.

The Medical Operations Officer will be identified by a florescent white vest, with "Medical Operations Officer" printed front and rear.

C. Evacuation Sector

The Evacuation Sector will normally be the first medical sector established at a MCI. The Evacuation Sector will be responsible for the management of victims where they are found at incident site.

The Medical Operations Officer, or Incident Commander will designate the most medically qualified respondent on the scene as the "Evacuation Officer". Ideally this would be a Paramedic of the Emergency Ambulance Division (E.A.D.). However, if hazardous conditions at the incident site (fire, smoke, etc.)

preclude the assignment of an E.A.D. member, the responsibility and designation of Evacuation Officer at the scene of the incident would logically be assigned to the officer in charge of the Rescue Squad until the hazards are controlled or removed, when the responsibility will be transferred to the medical member, as coordinated by the Command Post.

The Evacuation Officer will supervise a "Primary Survival Scan" of the victims. The primary objective of the primary survival scan is to rapidly assess all victims, for a medical size-up, moving quickly from one patient to the next, identifying and remediating only major exsanguinating hemorrhaging, airway obstruction, or other ventilatory problems that can be managed immediately, eg., hemorrhage that can be controlled by direct pressure (by rescuer or another lesser injured victim), airway obstruction that can be rectified by repositioning the head, ventilatory threat that can be abated by clearing the mouth and nose, or removing objects from the victims chest. Until all victims have been checked to this extent, no other individual patient care is to be initiated.

As soon as the magnitude of the situation is determined, the Evacuation Officer will inform the Medical Operations Officer of the medical size-up of the situation, including the approximate number and severity of injured, the resources needed, and his intended course of action. In those cases where the incident site is under the full operational command of a "Forward Command Officer" (Battalion Fire Chief of the Firefighting Division), such as in a Metro tunnel incident, the Evacuation Officer will relay the above information through the Forward Command Officer (radio designation - "Forward Command").

Once the primary survival scan is completed, the Evacuation Officer will determine whether to perform primary triage (tagging) at the incident site to determine priority for treatment and evacuation, or move the victims quickly to a collection and treatment area where primary and secondary triage can be safely done. This decision will be coordinated with the Forward Command Officer at the site, if any.

If there is no safety hazard within the evacuation sector, patient should normally receive rapid triage assessment, tagging, and primary treatment (sufficient to permit transfer to secondary triage site) where found at the incident site.

Patients would then be moved in an orderly fashion according to medical priorities (triage tag color) to the Treatment Sector where secondary triage and treatment will be given.

Note: The Command Post will ensure sufficient personnel as litter bearers utilizing Firefighters, Metropolitan Police, Metro Transit Police, etc. In general, medical personnel (E.A.D., etc.) will be utilized for patient care and not as litter bearers.

Where no safety hazard exists at the incident site, the first arriving E.A.D.unit(s) on the scene will be directed to the Evacuation Sector to assist in the Primary Survival Scan (and primary triage if possible) coordinating these activities with the Evacuation Officer. Entrapped victims requiring prolonged extrication efforts should be assessed by Paramedics where the victim is found and receive advanced life support (ALS) during extrication, if required.

Should an uncontrolled hazard exist at the incident site (fire, smoke, fuel leakage, etc.), the patients will be rapidly removed according to their location and ease of removal, and taken to the Treatment Sector for primary and secondary triage, and treatment.

The Evacuation Officer (radio designation -"Evacuation") will be identified by a florescent orange vest with "Evacuation Officer" printed front and rear.

D. Treatment Sector

The next medical sector normally established on a MCI is the "Treatment Sector", supervised by the designated "Triage Officer". The Medical Operations Officer will designate the first available Paramedic as the Triage Officer (the first arriving Paramedic(s) should be directed to the Evacuation Sector, if possible). The Triage Officer is responsible for the sorting of patients to establish priorities of treatment and transportation.

If the primary triage and tagging had not been given to patients prior to their arrival at the Treatment Sector, the Triage Officer will assign the appropriate number of E.A.D. personnel to provide rapid primary triage (tagging crews) prior to entrance to the secondary triage area of the Treatment Sector, where definitive treatment (and advanced life support where appropriate, given the number and severity of patients) will be given for stabilization, and continuing care for patients until they can be transported to a medical facility.

The proximity of the Treatment Sector to the Evacuation Sector will be determined by the circumstances of the incident and safety hazards. It must be a readily accessible area but isolated from any dangerous condition. The ability to maintain radio contact with the Medical Control Hospital (voice and telemetry) will be a factor in locating the Treatment Sector. If necessary, a temporary morgue will be established by the Triage Officer near the Treatment Sector. Custody of the morgue area must be maintained at all times (bodies and personal belongings), preferably by a police officer (MPD or Metro Transit Police). The person in charge of the temporary morgue will keep a list of victims therein, including triage tag number, and name if possible.

The Triage Officer must give specific assignments for personnel assigned to the Treatment Sector. Personnel assigned will need to be supervised closely to ensure that all patients are continuously monitored and proper treatment provided. On larger incidents, the Triage Officer may designate an E.A.D. member in charge of each priority area to maintain order and medical procedures (Red Triage Leader, Yellow Triage Leader, Green Triage

Leader). Triage Leaders will supervise their particular area and report needs and recommendations to the Triage Officer. Such reports would ideally be given face to face, rather than by radio, as radio traffic can be expected to be heavy.

All available "Advanced Life Support" providers, regardless of home jurisdiction on incidents requiring Mutual Aid (Paramedics-EMT-P, Intermediate Paramedics, EMT-IP, Cardiac Care Technicians, CCT, Cardiac Rescue Technicians, CRT), will be assigned to provide treatment in the first priority area (red tag), and then according to available numbers to the second (yellow tag) and third (green tag) priority area in that order.

A medic unit will be stationed as close as possible to the Treatment Sector for the Triage Officer's use of the Med radio repeater. This vehicle will not be used for transport.

The Triage Officer (radio designation, "Triage") will determine the order in which patients are taken to the Transportation Sector for transport to a receiving medical facility, working in close coordination with the "Transportation Officer", on fire radio channel 4, to advise him of patients ready for transport. The Triage Officer will be identified by a vest of florescent white with one diagonal stripe of international orange, with "Triage Officer" printed front and rear.

E. Transportation Sector

The Transportation Sector shall be supervised by the "Transportation Officer", as designated by the Medical Operations Officer, and shall be located as close to the Treatment Sector as possible. The location of the Transportation Sector will be made known to the Medical Operations Officer, Triage Officer, and the Staging Officer.

The Transportation Officer is responsible for providing appropriate vehicles (ambulance, helicopter, bus, van, etc.) for transporting the patients selected for transport by the Triage Officer. The Transportation Officer will contact the Staging Officer via fire radio channel 2, to summon the appropriate vehicle(s) from the Staging

Sector to the Transportation Sector.

A Paramedic will be selected as the Transportation Officer, and that Paramedic's medic unit will be positioned at the Transportation Sector for use of the Med radio. This vehicle will not be used for transport.

A Transportation/Communication Aide, designated by the Transportation Officer or the Medical Operations Officer, will maintain communications with F.D. Communication Division on Med radio call channel 2, from the Transportation Officer's medic unit. Maintaining the "Transportation Sector Patient Disposition Chart" and the "Hospital Status Chart" (see appendices 1 & 2) the Transportation/Communication Aide will coordinate and record the transport of each patient and the hospitals' availability status. As the F.D. Communication Division is made aware of changes in a hospital's availability status (increased by additional staff, decreased by emergency room saturation, etc.) the F. D. Communication Division member will notify the Transportation/Communication Aide to adjust and confirm status figures.

As each patient is brought from the Treatment Sector for transport, the Transportation Officer will assess the patients condition, and, consulting with the Transportation/Communication Aide for hospital status, decide to which hospital the patient will be transported and which unit will transport, recording this information on the patient's triage tag tear-off stub. The Transportation Officer will then tear off the stub and give it to the Transportation/Communication Aide for recording and notification to the F. D. Communication Division.

F. D. Communication Division will then notify the receiving hospital of the transporting unit, a brief statement of injury, and an estimated time of arrival (E.T.A.).

When transporting victims upon whom Advanced Life Support treatment has been initiated, the Transportation Officer will attempt, as much as conditions allow to have an Advanced Life Support (ALS) provider (EMT-P, EMT-1P, CCT, CRT) accompany the patient during transport.

However, during a MCI, the lack of an ALS provider will not preclude the prompt transport of the patient by a basic life support (BLS) provider.

The Transportation Officer is responsible for providing a safe helicoptor landing site if this service is to be utilized. Should the Transportation Sector not be suitably located for this purpose, the responsibility would be delegated to a Firefighting Division unit, through the Command Post.

The Transportation Officer should maintain two ambulances at the Transportation Sector, the Transportation Officer will require that the unit be stripped of medical supplies not needed during transport (4-wheeled stretcher, backboards, Reeves stretchers, etc.). In this manner, a resource pool of medical supplies will be maintained at the Transportation Sector, and the 4-wheeled stretchers will be taken to the Treatment Sector to be used to move patients between the Treatment and Transportation Sectors.

Coordinated by the Transportation/Communication Aide and F. D. Communication Division, with the receiving hospitals, transporting units can be directed to pick up specific medical supplies at the receiving hospital for direct return to the Transportation Sector. Upon directions of the Command Post, a "Resource Officer" will be designated to be responsible for the aforementioned resource requirements, and will coordinate with the Transportation Officer for instructions for transporting units to return medical supplies. To ease radio traffic, transporting units are directed to transmit only emergency messages, and return directly to the Staging Sector after delivery of patient at the receiving hospital, unless returning supplies from the receiving hospital to the Transportation Sector.

The Transportation Officer will ensure that a transporting unit from another jurisdiction knows the route to the receiving hospital, assigning a D.C.F.D. member as driver or aide, if necessary.

The Medical Operations Officer will ensure that the Transportation

Officer has sufficient aides to manage the Transportation Sector.

The Transportation Officer will be identified by a florescent red vest with "Transportation Officer" printed front and rear. Transportation Sector aides will be identified by florescent red vests with "Transportation Aide" printed front and rear.

F. Staging Sector

The Staging Sector will be supervised by the "Staging Officer" who will be the officer in charge of the first engine company dispatched to the Staging Sector, or as designated by the Command Post. (The normal procedure would be the assignment of a "Second Alarm" to a Staging Sector designation by the Incident Commander, in which case the engine company first due on the Second Alarm would be the Staging Sector unit, and the officer of that unit would be the Staging Officer, who would utilize the engine company personnel to manage the Staging Sector, including the Staging Sector Incident Chart).

The Staging Sector should be established reasonably close to the incident, yet far enough away that congestion at the incident site is minimized, while still allowing staged apparatus the mobility to move up to, or around to, the other side of the incident site, if necessary the Staging Officer will keep all units in queue, separating fire units from ambulance units. All units responding or returning to the Staging Sector shall be directed to approach the Staging Sector from the side away from the incident so that a one-way traffic pattern is established from the Staging Sector to the incident site and units do not interfere with this pattern, falling in at the rear of the Staging Sector.

The Staging Officer will supervise the accurate recording of the Staging Sector Incident Chart, including listing of all units, personnel, special equipment and supplies in the Staging Sector. When listing E.M.S. units in the Staging Sector, the E.M.S. personnel will be counted as ALS providers (EMT-P, EMT-IP, CCC, and CRT) or BLS providers (EMT). Calls to the Staging Sector for EMS personnel should be for these two categories only, and no more specific.

The Staging Officer shall ensure that adequate Police personnel are assigned to the Staging Sector, for the security of apparatus left unattended, requiring all personnel leaving apparatus in the Staging Sector to leave the keys in the ignition. This need will be coordinated through the Command Post.

The Staging Officer will maintain Communications with the Command Post and the Transportation Officer on fire radio channel 2, and contact F. D. Communication Division direct to dispatch appropriate units to the Staging Sector to maintain two engine companies and one truck company in the Staging Sector at all times.

The Staging Officer will require personnel to remain near their apparatus, ready for call up by the Command Post (fire equipment/personnel) or the Transportation Officer (EMS units/personnel), informing each of where they are to report, and equipment needed. Unless specifically requested, personnel ordered to the incident site will leave apparatus in the Staging Sector (with Keys in ignition) and proceed to the incident site on foot.

To minimize radio traffic, communications within the Staging Sector should be made via face to face, apparatus public address (PA) system, bull-horn, or runners.

The Staging Officer will be identified by a florescent lime vest with "Staging Officer" printed front and rear. Staging Aides will be similarly identified by florescent lime vests with "Staging Aides" printed front and rear.

F. Resource Sector

When the size of the incident indicates the possibility that stocks of medical supplies and equipment carried on apparatus may be consumed, the Incident Commander will designate a "Resource Officer" who will be responsible for procuring and assembling all of the supplies and equipment necessary to meet the expected demands of the incident. Because the Resource Officer is responsible for supplying the needs of all sectors at the incident, his position within the Command structure is directly below the Incident Commander, and his physical location will normally be at the Command Post where he will be able to fulfill the supply needs of the Fire Operations and Medical Operations Officers.

The Resource Officer will need sufficient aides, (one engine company) to monitor supplies on hand at the Treatment Sector, assisting the Triage Officer to dispense medical supplies, and to distribute arriving supplies to the requesting sector. At least one Resource Aide should have a thorough knowledge of medical terminology and supplies.

The Resource Officer will coordinate supply needs with the Transportation Officer in those cases where transporting units were directed to pick up medical supplies at a receiving hospital and return them to the Transportation Sector.

The Resource Officer will coordinate the needs of the incident beyond that which is available from fire department and receiving hospital sources with the responding representative of the D. C. Office of Emergency Preparedness (DC/OEP), (Mayor's Command Center) who will be designated as the "Liason Officer"and will coordinate the resources of all other D. C. Government and Federal agencies, as directed by the Incident Commander.

The Resource Officer will be identified by a vest of florescent blue, with "Resource Officer" printed front and rear. Resource Aides will wear similar vests printed "Resource Aides" front and rear.

G. Multiple Treatment Sectors

On those incidents where it is not practicable or possible to bring all patients to one Treatment Sector for secondary triage and treatment, the command structure must be altered to coordinate more than one Treatment Sector.

This command and organizational structure retains the management philosophy that a single command is most effective. It also assumes that the most efficient coordination of patient transportation will result from a single Transportation Officer, in contact with F. D. Communication Division (via the Transportation/Communication Aide), making the determination of receiving hospitals.

During multiple Treatment Sector operations, the Transportation Officer and Transportation/Communication Aide take a position at or near the Command Post. The basic responsibilities of the Transportation Officer remain the same as during single Treatment Sector operations. However, for Multiple Treatment Sector operations, the Medical Operations Officer will designate one Triage Officer and one Transportation Aide per Treatment Sector. Each Triage Officer and respective Transportation Aide will be numbered for reference.

Each Triage Officer will coodinate the transportation needs of his particular Treatment Sector with the assigned Transportation Aide. Each assigned Transportation Aide will coordinate the transportation requirement with the one Transportation Officer.

The Transportation Officer, in contact with F. D. Communications Division, will determine the receiving hospital, inform the appropriate Transportation Aide, and contact the Staging Officer to have an appropriate unit report to the requesting Transportation Aide for patient transport.

Each Transportation Aide will be responsible for collecting the tear-off stub of each triage tag after recording the transporting unit and hospital destination, and relaying this information to the Transportation Officer for recording on the Transportation Sector Patient Disposition Chart. In multiple Treatment Sector operations, each Transportation Aide assigned to a Treatment Sector will keep a Patient Disposition Chart for that Treatment Sector to be matched with the Master Patient Disposition Chart kept by the Transportation Officer, after the incident is secured.

Radio Communication in such situations will be extremely difficult. Therefore, as much as possible, each Triage Officer and respective Transportation Aide shall communicate face to face.

III. Triage Plan

A. Primary (First Stage) Triage:

1. Survey Incident Area: Make a quick survey of all injured, stopping only to treat airway problems and severe, copious uncontrolled bleeding. (Primary Survival Scan)

2. Additional Help - Notify the Medical Operations Officer.

    a. Nature of the problem and exact location.

    b. Approximately the number injured.

    c. Additional equipment needed.

3. Tagging Patients - After the Evacuation Officer has a complete picture of the incident, tagging should be done.. On extremely large incidents, such as large buildings or Metro rail accidents the problem should be subdivided into smaller areas, for example, one tag and sort team per floor, or Metro rail car.

A. Red Tag (Immediate)

Patients requiring a red tag are to be given first priority in evacuation. These people require immediate care. If patient is in an automobile it also should be tagged so other crews arriving will be able to locate the patients rapidly. The tag should be removed from the automobile when the patient is removed. Those patients receiving red tags should fit into one of the following categories:

1). Uncorrected respiratory problems

2). Cardiac arrest (witnessed arrest)

3). Severe blood loss (2 pints or more)

4). Unconscious

5). Open chest or abdominal wounds (this includes severe crushing injuries that may not be open)

6). Several major fractures

Type of Major Fractures

(a). Pelvis

(b). Flail chest

(c). Fractures of cervical vertabrae

(d). Fractures of joints where a pulse cannot be detected below the fracture site

(e). Fracture of femur

B. Yellow Tag (Secondary)

Patients requiring a yellow tag are to be given second priority in evacuation. These patients require care but are not as life threatening as the first priority patients.

Those patients receiving yellow tags should fit into one of the following categories:

1. Severe Burns:
    - (a). Second degree burns covering more than 30% of the body
    - (b). Third degree burns covering 10% of the body
    - (c). Burns complicated by major soft tissue injury or minor fractures.
    - (d). Third degree burns involving the critical areas of the hands, feet, or face, but not involving the respiratory tract.
2. Moderate blood loss (1 to 2 pints)
3. Back injuries with or without spinal cord damage

4. Conscious with serious head injuries (serious enough to cause a subjural hemotoma or brain contusion) Example: These patients will show one of the following signs:

   (a). Spinal fluid showing in ears or nose

   (b). Rapid rise in systolic blood pressure

   (c). Projectile vomiting

   (d). Respiratory rhythm change

   (e). Pulse below 60 per minute

   (f). Swelling and discoloration beneath the eyes

   (g). Unequal pupils

   (h). Seizure

   (i). Weak or no motor strength

   (j). Poor reaction to sensory stimuli (deep stupor)

C. Green Tag (Delayed)

Patients requiring a green tag are to be given third priority in evacuation. Those patients requiring a green tag should fit into one of the following categories:

1. Minor fractures, fingers, toes, etc.

2. Other minor injuries, abrasions, contusions, check-ups, etc.

3. Obviously mortal wounds in which death appears reasonably certain

    (a). Second and third degree burns to more than 40% of the body

    (b). Second and third degree burns to more than 40% of the body with other major injuries such as major fractures, severe head injuries, chest injuries, etc.

    (c). Head injuries where brain tissue has been exposed and patient is unconscious

    (d). Head injuries where patient is unconscious and has major fractures

    (e). Spinal injuries where movement and feeling are not present

    (f). Patients with major injuries over 60 years old

Note: There is a fine line between this type of patient and a red tag patient. If you have several red tag injury patients, then you may have to decide to use this system.If there are no other red tag patients, this patient becomes a red tag candidate. The reason for this is that if you have several red tag patients that may be able to survive and some that due to their injuries cannot be saved then the time used on the mortally injured patients can then be devoted to the ones that could be saved.

4. Minor Burns

(a). Second degree burns of less than 15% of the body

(b). Third degree burns of less than 2% of the body surface

(c). First degree burns of less than 20% of the body, excluding hands, feet, and face

D. Gray Tags - (Deceased)

Those patients without a pulse or respiration who have been in such a state for more than 20 minutes or whose injuries make C.P.R. effort impossible.

4. Method of Removal

a). Non-entrapped Patients - Non-entrapped patients are to be removed first in the following order:

1. Red tag patients
2. Yellow tag patients
3. Green tag patients

b). Entrapped patients - Entrapped patients are to be removed next in the following order:

1. Red tag patients
2. Yellow tag patients
3. Green tag patients
4. Non-entrapped gray tag patients
5. Entrapped gray tag patients

B. Second Stage Triage - A secondary triage may be needed on a large incident where a lot of people are injured. All patients are to be sent from the first triage area to this area.

The Medical Control Officer on the incident will decide if a secondary triage area is needed. If it is needed, he will then delegate a paramedic to act as the Triage Officer.

The Triage Officer will be responsible to see that the following is done:

1. Re-evaluating the patients condition and retagging if necessary.
2. Further definitive care such as drugs, I.V., etc.
3. Prioritizing the transportation of patients.
4. Requesting needed medical supplies and equipment. A medic unit should be used as a field hospital unit and medical communications unit.

C. The "Transportation Officer" will route the patients to the hospital by:

a. Helicopter

b. Regular ambulance, medic ambulance

c. Other means if necessary

Note: Whenever possible no more than two red tag patients should be sent to any one hospital. Also if there are entrapped red tag patients, a spot at the closest hospital may be held open for him.

1. Keep a record as to who was sent where. This is done by the Transportation Officer by tearing off the discrete number and giving it to the Transportation/Communication Aide or the person delegated by the Transportation Officer to record the Patient Disposition Chart.

D. Third Stage Triage: This is done at the hospital by hospital personnel. (See treatment of Mass Civilian Casualties, U.S. Department of Health, Education and Welfare, Public Health Service for more information). Note: Hospital personnel should leave triage tags on patients until ambulance personnel have a chance to get the information for their reports at a later time.

1. When the MCI plan is put into effect, the on-duty E.A.D. Supervisor or Medical Officer will respond to oversee patient care and to see that the District of Columbia medical protocol is followed.

D. Filling Out Triage Tags:

1. Write in patients name if possible and time permits
2. Sex
3. Injuries - only main problems and use abbreviations if possible
4. EXAMPLE: Comp. Frac. Lower Lt. leg, Lac. front of head, unconscious, etc.
5. Any drugs given
6. Home of person giving aid
7. Ambulance number and county, city, etc.
8. On reverse side of tag put small X over injured area and if time permits, check proper box
9. Attach tag to an obvious location on the body by using the attaching cords, being sure not to cut off circulation of the limb
10. Further information for ambulance reports can be gathered at a later date by use of the discrete numbers

11. Never use a felt tip pen in rainy weather

12. On airplane crashes obviously dead patients and pieces of bodies should be left where they are until the Federal Aviation Administration authorizes their removal

E. Removal from Aircraft:

1. If the patient is obviously dead, they should be tagged with gray tag and left where they are until the Federal Aviation Team arrives. This team will be notified by Communication Division.

2. If a patient must be removed for various reasons, the remaining tags from that packet should be left from where the patient was removed. At a later time the discrete numbers can be matched up and compared with a seating chart for identification.

3. The crash area should be sealed off from the public and debris should not be moved unless absolutely necessary.

IV. Communication

A. There will be man means of communicating at the scene of a mass casualty incident (MCI) with an expected high degree of emergency response. Each means has advantages and disadvantages, some of which are listed:

1. Radio
    a. most readily available means of two-way communication over long distances
    b. if every member with a portable or mobile radio were to use it, would create traffic problem
    c. spare batteries must be available
    d. limited number of available channels
2. Telephone
    a. excellent two-way communication
    b. need not be as formal or discrete as with radio
    c. limited availability
3. Field Phones
    a. most reliable means of two-way communication
    b. private

   c. spare batteries must be available

   d. difficult to lay connecting hard wire

   e. nine pair of phones and cable reels available within department (D.F.C. & B.F.C. cars)

4. Bull-horns

   a. effective as one-way communication if reply not necessary

   b. spare batteries must be available

5. Apparatus Public Address (PA) System

   a. Effective as one-way communication if reply not necessary

   b. readily available (all command officers' cars and rescue squads)

   c. no batteries necessary

6. Runners

   a. effective alternative to radios over short distances

   b. can be misunderstood or misinterpreted if messages not written

   c. requires additional manpower

7. Face to Face

   a. where possibly best and most reliable means of communication

B. Radio communication at the scene of a MCI can be expected to be quite heavy, and will therefore, require discipline from all participating units. All radio communication must be short, precise, and necessary. The degree of discipline and adherence to guidelines established herein will be a major factor in the success of the entire operation.

C. Assigned Radio Channels

1. Firefighting units on the scene of a MCI will be operating on fire radio channel 2, except in sub-surface portions of the Metro rail system where inter-sector communication will be on fire channel 1.
2. All E.A.D. units portable radio will be on channel 4 (Med portable radios will be on the assigned Med or Call Channel).
3. The Triage and Transportation Officers will have both a fire portable and Med portable radios.

4. Wherever possible, face to face communication is preferrable. The use of runners for messages during peak radio traffic may be an effective secondary means of communicating provided the message is repeated and understood by the runner.

5. Basically, radio communications should only be made between sector commanders, and between sector commanders and the Command Post (Fire Operations Officer -"Fire Ops",.and Medical Operations Officer - "Med Ops").

6. Except in extreme emergencies, all radio communication from the scene of the incident to F. D. Communication Division will be on channel 1, and either made by, or approved by the Incident Commander, with only two exceptions:

    a. Transportation Officer (or Transportation/Communication Aide)

    b. Staging Officer (may contact F.D. Communication Division direct to keep two engine companies and one truck company in Staging Sector

7. The Triage Officer shall request and be assigned a Med channel by F. D. Communication Division. A radio test and calibrated telemetry test strip shall be transmitted to the "Control Hospital" when selecting site for Treatment Sector.

   To facilitate the use of the Med radio, the Medic unit shall be parked as close as possible to the Treatment Sector, with the engine left running. This unit will not be used for transport.

   The Triage Officer will communicate with the Transportation Officer to coordinate the transportation of patients on portable radio channel 4.

8. The Transportation Officer will establish and maintain communication with F. D. Communication Division on Med radio call channel 2. He will communicate with the Triage Officer on the portable radio fire channel 4.

   Radio communication with the Staging Officer will be on portable radio fire channel 2.

9. The Medical Operations Officer ("Med Ops") will monitor all

E.A.D. radio traffic on portable radio fire channel 4.

10. Once airborne, communication can be made directly to the two U.S. Park Police helicoptors (Eagle 1 and Eagle 2), and the four Maryland State Police helicoptors (No.s 1 thru 4) on the Fire Mutual Aid Radio System (FMARS) channel 3 (154.280 MHZ). Until such time as all portable radios are equipped with the Mutual Aid channel 3, the Transporatation Officer must obtain through the Command Post, a portable radio so equipped (Battalion Fire Chief's portable), or use a mobile radio on a nearby piece of fire apparatus (all mobile radios have the Mutual Aid channel 3), when required to contact a responding helicoptor.

11. Upon request for Mutual Aid ambulance units, the F. D. Communication Division will advise requested units to use Med radio call Channel 1 for directions or instructions from D.C.F.D. Communication Division.

All Mutual Aid units will be directed to respond to the Staging

Area and will, at the time of the request to respond, be given directions to the entrance point of the staging area. From the time Mutual Aid units arrive at the staging area, all directions or instructions will be given in person by the Staging Officer, Transportation Officer, and assigned to the Treatment Sector, the Triage Officer.

V. Manpower Requirements

A. The Incident Commander must anticipate the greatly increased manpower requirements to effectively manage a MCI.

Listing by MCI Sector and performance requirements, manpower needs can be examined and estimated for overall incident needs.

1. Evacuation Sector (Incident Site)

The distance involved and mode of transporting the victims from the Evacuation Sector to the Treatment Sector will be critical factors in determining the manpower needs of this sector.

If victims are to be carried on stretchers over a long distance, four litter bearers per stretcher must be allocated. For shorter distances, two litter bearers may suffice, but rescuer fatigue will quickly be a significant factor.

If on a Metro rail accident, a rescue train will bring the victims to a Treatment Sector, at least one BLS provider per fifteen green tagged victims, and one ALS provider (if available) per three red or yellow tagged victims, shall be assigned to each rescue train transport movement.

Manpower personnel should be assigned to one particular sector so that they can be more easily monitored for fatigue, and appropriate relief arranged. If manpower personnel were to move from sector to sector, control and effective monitoring would be impossible.

While it is expected that litter bearers will make repeated transports, and that not all victims can be expected to be transported to the Treatment Sector at one time, the Evacuation Sector can be expected to require the greatest amount of manpower. In anticipating the immediate manpower needs of the Evacuation

Sector, a quick estimate may be made for short distance carries by multiplying the total of red and yellow tagged victims by two (ex. 10 red tags and 5 yellow tags = 15, times 2 = 30 rescuers). By addition, the above example of a short distance carry with 10 red tagged victims, 5 yellow tagged victims, and 40 green tagged victims would cause the Incident Commander to allocate 70 rescuers to the Evacuation Sector (and 55 stretchers, backboards, or other, 1 per victim).

On longer distance carries, multiply the total of red and yellow tags by four, and add one rescuer per green tag victim.

In the same example above, the estimated number of manpower personnel would be 100. (10 red and 5 yellow = 15, multiplied by 4 = 60, and added to 40 green tags = 100).

The above estimates may seem high, but are based on the experience of four simulated emergencies in the Metro system and the accepted practice that red and yellow tagged victims are "urgent" medical cases in need of rapid movement to an area where definitive treatment can be administered.

These rules-of-thumb are however, offered only to aid a quick assessment of manpower needs, and will be adjusted as the situation develops.

2. Treatment Sector

If victims do not receive primary triage (tagging) at the Evacuation Sector, sufficient medical personnel must be assigned to this purpose at the Treatment Sector. While no rule-of-thumb is offered, a severe battleneck can be expected if only a few medical personnel are to assess and tag a great many victims.

Ideally, one ALS provider will be assigned to treat each red or yellow tagged victim, while one BLS provider can treat several (3-5) green tagged victims. This is in addition to the requirement for a Paramedic as Triage Officer and Paramedics or ALS providers for Red, Yellow, and Green Triage Leaders.

Sufficient (and different) personnel must be assigned as manpower at the Treatment Sector, to move patients within the sector and ultimately to the Transportation Sector for transportation to receiving hospitals.

While it is expected that the Treatment Sector will be much closer to the Transportation Sector than to the Evacuation Sector, and that 4-wheeled stretcher will be used to carry the victims to the waiting ambulance, sufficient manpower must be available to ensure immediate transport when directed by the Triage Officer.

3. Transportation Sector

THese MCI procedures allow that the Transportation Officer be a Paramedic, and at least one aide, familiar with the Med radio, be assigned as the Transportation Aide. Experience has shown, that an additional two medical personnel (BLS providers sufficient) will be needed to fulfill the responsibilities of this sector.

4. Staging Sector

It is anticipated that one engine company can effectively control the Staging Sector.

5. Resource Sector

It is anticipated that a sufficiently large contingent of personnel (10-15) may be necessary to move supplies about the incident, at the direction of the Resource Officer and Triage Officer, and to effectively monitor reserve supplies. It must be understood that in addition to medical expertise and knowledge of the MCI procedures, having sufficient manpower on the scene of a MCI, properly allocated, is a critical factor in a successful and professional emergency response to a mass casualty incident.

The Incident Commander can coordinate requests for extra manpower with the Command Post representatives from Metropolitan Police and/or the D. C. Office of Emergency Preparedness (DC/OEP).

STATEMENT BY
THEODORE WEIGLE
ASSISTANT GENERAL MANAGER FOR TRANSIT OPERATIONS
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
BEFORE THE
SUBCOMMITTEE ON GOVERNMENTAL EFFICIENCY AND THE DISTRICT OF COLUMBIA
COMMITTEE ON GOVERNMENTAL AFFAIRS
UNITED STATES SENATE
MAY 18, 1983

Mr. Chairman:

It's a pleasure to be here today to discuss the Washington Metropolitan Area Transit Authority's role with regard to emergency preparedness in the area. This is an important subject and it's one in which Metro plays an important part. We at Metro are deeply concerned for the safety of our passengers. Indeed we are absolutely committed to operating the safest public transportation system possible, and that includes being prepared to deal effectively with emergencies. Metrorail's safety record is the best in the industry, even when the unfortunate accident in January, 1982 is considered.

Mr. Chairman, your letter of invitation requesting our appearance today asked that we include answers to four questions in our testimony. Perhaps the best way to proceed is to simply take these questions in order.

1. How does WMATA coordinate a decision to close down the transit system in emergency situations with a decision by Federal officials to release Federal workers?

WMATA coordinates with the Office of Polic, & Communication of the U.S. Office of Personnel Management and the Mayor's Command Center in the District of Columbia regarding the early release of Federal employees. In such situations, the Authority must be informed of such a decision in time to hold over morning rush hour operating personnel in order to accommodate an early release. Even under this circumstance

WMATA is concerned about related issues such as the timing of traffic signals, enforcement of parking regulations and provision of transit service to persons who are not released early. Our objective is to provide safe public transportation until the peak travel demand has been met and then assess whether the transit system must be closed.

Under current arrangements, OPM informs the Authority when it is first considering early release and then when it makes a final decision. OPM has been informed that we need to know of a pending release by 8:30 a.m. to assure the early availability of full evening service. During the snow emergency this February, however, the Authority initiated contact with OPM and indicated that operating conditions had deteriorated to the point that early release was advisable. Following several telephone conversations with the Authority, OPM responded to our concern by releasing Federal employees. WMATA is fully appreciative of the magnitude of OPM's decision, and will continue to work with OPM to ensure that transit operating conditions and requirements are incorporated in an early release decision.

2. What are the major components of WMATA's emergency plan?

   A) The WMATA Systems Safety Program Plan (SSPP) which establishes WMATA policy, procedures, and programs to ensure that safety is a major consideration at every stage of all WMATA activities including planning, design, construction, and operations to ensure the highest practical level of safety for our passengers and employees. This Plan defines programs for fire protection, emergency preparedness and the fire/rescue emergency services which are provided by the jurisdictional fire departments.

B) Emergency Preparedness Coordination which is accomplished through the Council of Governments Metrorail Fire Rescue Liaison Officers' Committee to coordinate joint training programs and resolve fire safety concerns.

C) Cooperative Agreements and Memoranda of Understanding with the fire and police departments in the Washington Metropolitan area on:

- Fire Protection, Equipment, and Life Safety
- Fire/Rescue Emergency Procedures Policy
- Fire/Rescue Operations Procedures, and
- Emergency Police Responsibilities

D) The Metrorail and Transit Police Standard Operating Procedures (SOP) for handling emergencies to ensure a coordinated response to all emergencies. Our personnel are throughly trained in the procedures and we share our training films with local fire departments.

E) Joint WMATA/Fire Department Emergency Drills and Training Programs, which are conducted with the local fire departments to train WMATA and Fire Department personnel in the established procedures. Eighteen emergency drills or mock casualty simulations have been conducted since 1976. A listing of those drills is attached for your review. In addition, WMATA has conducted training programs at the fire department training centers and fire stations to ensure that all fire department personnel are trained in the proper response to Metrorail emergencies.

WMATA feels that this comprehensive approach to emergency preparedness provides our passengers and employees with a high level of safety. We are continually assessing our plans, procedures, and training to keep our safety program current and responsive.

If the Chairman wishes, I will leave copies of these documents with the Committee.

3. What arrangements have been made between WMATA, the Federal Aviation Administration and local jurisdictions to coordinate responses to emergencies at Dulles and National Airports?

There is a regional mutual aid agreement which applies to all fire departments in the region which is administered by the Metropolitan Washington Council of Governments and covers emergencies at local airports. Should an aviation disaster occur at either National or Dulles Airports, WMATA would certainly endeavor to provide whatever support was requested, such as providing buses to transport victims with minor injuries or any other assistance required. Additionally we benefit from this agreement since Washington Airport fire personnel are the first company called to an incident at the National Airport Metro station.

4. What are some of the lessons learned from the November 7, 1982, Metro drill? Are other drills planned?

The November 7, 1982, drill was a coordinated effort by WMATA, the D.C. and Arlington County Fire Departments and Rescue Squads, ten area hospitals, and numerous other jurisdictional emergency response agencies. Nearly 1200 persons participated in the November 7th drill, which simulated a "worst case" accident in the Metrorail tunnel under the Potomac River. The drill scenario included a train derailment, loss of third rail power, and a fire under the train. Two hundred "uninjured" passengers were evacuated, and approximately two hundred "injured" passengers were rescued by the Arlington County and District of Columbia Fire Departments. The "injured" passengers were transported to ten area hospitals via ambulance, helicopter and Metrobus.

Evaluation by Metro monitors indicated that the handling of the WMATA emergency response actions was very successful. All rescue train moves were made properly. Existing communication, power, ventilation, standpipe, and control systems worked well. Also, four new systems including the D.C. fire Department tunnel radio system, a fire/rescue telephone system, a prototype evacuation cart, and a prototype third rail warning device were tested successfully.

Among the things we learned from the drill is the need for more frequent drills to improve emergency response times. Consequently WMATA is working with the Fire/Rescue Liaison Officers' Committee on a program to conduct more frequent drills. Further drills will include a mix of unannounced and scheduled drills and a mix of full simulations and "table top" communications drills to ensure the proficiency of all personnel in handling emergencies.

Mr. Chairman, your letter to us also mentioned the Committee's interest in WMATA's ability to respond during a major snowstorm, and made specific reference to the most recent snow on February 11. As you know, on February 11, 1983, the area was hit with a storm which accumulated some 24 inches of snow in parts of the region in less than 24 hours. According to meteorological data, such a storm occurs twice a century in this area. We are not currently equipped to deal with a storm of this magnitude.

Following a severe snow in February of 1979, the WMATA Board approved the expenditure of $970,000 to purchase additional snow removal equipment. That equipment prepared us to deal effectively with a 6 year snow (10-12 inches in 24 hours). We are currently reviewing our level of preparedness and will be reporting to the Board of Directors on any recommendations for enhancing our ability to respond to snow emergencies. We have already provided a report to the Board on the events surrounding the February, 1983 storm, summarizing actions taken after the 1979 storm, and pointing out problem areas. A copy of that report is available for the record.

Given enough money, WMATA, like the state and local jurisdictions in the Metropolitan area, could handle virtually any storm, no matter how unlikely or infrequent such a storm is. Our Board of Directors must decide what level of protection we can afford to purchase, as must the governing bodies of the local jurisdictions.

Again, we appreciate the opportunity to testify and will attempt to respond to any questions the Committee may have.

Senator MATHIAS. Our second panel includes Mr. James Wilding, the Director of Metropolitan Airports; Mr. Patrick Korten, Executive Assistant Director of the Office of Policy and Communications, Office of Personnel Management; and Mr. Dave McLaughlin, Deputy Associate Director, State and Local Programs and Support, Federal Emergency Management Agency.

As in the previous panel, we will ask you to try to summarize your statements in about 3 minutes, which will be 3 minutes of green light and then you will get the red light.

Mr. Wilding?

TESTIMONY OF JAMES A. WILDING, DIRECTOR, METROPOLITAN WASHINGTON AIRPORTS, FEDERAL AVIATION ADMINISTRATION; PATRICK S. KORTEN, EXECUTIVE ASSISTANT DIRECTOR FOR POLICY AND COMMUNICATIONS, OFFICE OF PERSONNEL MANAGEMENT; AND DAVE McLOUGHLIN, DEPUTY ASSOCIATE DIRECTOR, STATE AND LOCAL PROGRAMS AND SUPPORT, FEDERAL EMERGENCY MANAGEMENT AGENCY

Mr. WILDING. Good morning, Mr. Chairman. I am James Wilding, the Director of Metropolitan Washington Airports. Thank you for the opportunity to participate this morning.

We have indeed submitted to you a statement which provides detailed information on the four points which you requested us to address. I will briefly summarize our testimony and ask that the full statement be made a part of the record.

Senator MATHIAS. Without objection, a copy of your entire statement will be inserted in the record.

Mr. WILDING. We have indicated in our statement that our emergency response procedures for National and Dulles Airports are sound and current. They are also compatible with the emergency plans of other local jurisdictions.

Our procedures are spelled out in emergency manuals, one for each of our two airports. These manuals are, in addition to being used by our own people, also provided to neighboring jurisdictions and area hospitals.

Our public safety people are well equipped and well trained to respond to a variety of emergency situations. We have in addition backed up our own capabilities with mutual aid arrangements with our neighboring jurisdictions.

We support the recent work done by the Metropolitan Washington Council of Governments. We have already reacted to a number of their recommendations, and we look forward to continuing to work with them.

Our public safety people work very closely with their counterparts in the region, both in the planning and operational phases of emergency response activity.

Again, our full statement addresses each of these points in considerable detail, and I again thank you for the invitation to participate.

Senator **MATHIAS**. Thank you very much. As with the other panel, we will wait until everyone on the panel has had a chance to speak before asking questions.

Mr. Korten?

Mr. **KORTEN**. Mr. Chairman, I will let the statement that we submitted for the record stand and just make a couple of comments, drawing upon what has been going on or what has been said in the last hour or so.

Senator **MATHIAS**. Without objection, a copy of your entire prepared statement will be inserted in the record.

Mr. **KORTEN**. As you, of course, are well aware, OPM's role in emergency situations here in the Washington area arises only in the case of a general emergency situation when most or all Washington area Federal employees are affected, and of course there are some 340,000 of them here in the Washington area.

This would not be the case in localized situations, one of which occurred earlier this year down at the Washington Monument when the individual drove the truck up next to the monument and threatened to blow it up. In that case, all of the coordination was done between local police agencies, the Park Police and the individual agencies involved who had offices that were immediately situated nearby. There is no reason for OPM to get involved in that and add an extra layer of involvement in a situation like that.

When OPM's involvement is required, it will almost always involve hazardous weather. That is just about the only situation in which all or most of the Federal employees here would be involved. In a case like that our job, as we see it, is to try to ensure that both the Federal Government's vital and important work goes on while avoiding situations where commuting by Federal employees would cause or contribute to an adverse effect on public safety.

Now, the incident in January 1982 was a case where an emergency occurred after the Government had decided to allow an early dismissal of Federal employees. We learned a lot from that situation. We learned that the existing plan which had been around for some years regarding standard dismissals did not work. We devised a new system which was used in the snow storm this February which, in our experience, worked much better.

I would like to conclude briefly just by noting some of the things that I stated in my conclusions in the formal testimony. That is that when we make the decision about what to do in terms of Federal leave policy in a snow situation for example, we have to take into account most importantly the fact that Federal employees perform some tasks which are extremely important and which should not be abandoned lightly or in panic at the sign of a first snowflake.

Whether these employees are ensuring the delivery of a pension check in some far flung State or preparing for the launch of a space satellite or gathering data on the basis of which millions of financial decisions are going to be made in the private sector or tending to the safety of the environment, all of these tasks and jobs are of vital importance. They do not become any less important when it snows. They are all the more important here in the Washington area as opposed to other cities with large Federal presences because a shutdown of agency headquarters here affects installations in offices all over the country and indeed all over the world.

One other factor that I think we ought to take into account is the opinion held by the general public toward government workers. Private sector workers don't benefit from the kinds of leave policy that we have available to employ occasionally for Federal workers, and we know that when we allow special leave policy here in the Washington area it is sometimes resented by private sector employees who have to go on working when it does snow.

So, we have to take all of those things into account when we make a decision on leave policy.

Senator MATHIAS. Thank you very much, Mr. Korten.

Mr. McLoughlin?

Mr. McLOUGHLIN. I will summarize my prepared testimony in three basic points, and ask that the entire statement be made a part of the record.

Senator MATHIAS. Without objection, a copy of your entire prepared statement will be inserted in the record.

Mr. McLOUGHLIN. First, one of the primary missions of our agency, the Federal Emergency Management Agency, is to assist State and local governments with their emergency preparedness efforts. My prepared statement does list numerous financial and technical assistance programs that we have available.

The second point I would make is that in working with State and local governments we do emphasize preparedness for all emergencies, that is natural, man-made, and work-caused emergencies.

We emphasize an integrated emergency management system approach which recognizes the commonality of functions across all of these disasters. For example, in communications and warning systems, they are equally applicable to floods as they are to war-caused emergencies. In the area of our direction control assistance programs they are applicable also across the board. Our evacuation planning assistance is applicable to floods, hazardous materials, earthquakes, hurricanes, as well as war-caused emergencies.

The final point that I would make is that in addition to our preparedness activities we also have a number of programs in mitigation response and recovery. In the mitigation area we do provide for flood plain management, for example, and assistance in seismic safety in the earthquake area in building codes.

In the response area we are prepared to coordinate the Federal effort among the many agencies that may respond to a disaster that is beyond the control of either State or local government.

Last in the recovery effort, as you undoubtedly know, we have ongoing right now in the country many major disasters that have been declared by the President. We do administer the Disaster Relief Law, Public Law 93-288.

Senator MATHIAS. Thank you, Mr. McLoughlin.

Let me start with Mr. Wilding. Do you include hospitals in the emergency response drills that you conduct?

Mr. WILDING. Yes, sir, we do. As I noted in my statement, we provide the area hospitals with copies of our emergency operating manuals. We include them in our drills. Then in those procedures we also have as a part of those procedures notification of those hospitals right away if something is really going on that is going to need their assistance.

Senator MATHIAS. I see Dr. Smith is still in the room, and I will include him in this question. Are there enough ambulances in the area to take care of a disaster? I guess we better break that question down to the District and then the whole area.

Mr. WILDING. All of our drilling and simulations have had very adequate amounts of transport reaching us, but one is hesitant just to say flatly yes. In a really major disaster at one of the two airports, that would probably be one of the problem areas you would be looking for.

However, to the extent we can simulate it, demonstrate it, and count the resources, we seem to be in fairly good shape.

Senator MATHIAS. Dr. Smith, do you have any comments on that?

Dr. SMITH. I think that the number of ambulances in the District of Columbia is woefully inadequate. For whatever reason, we have an enormous number of ambulance runs. To compare our statistics of ambulance runs per ambulance unit, we are at the top of the list across the country. We have, I think, 17 units. We could use four or five more.

Senator MATHIAS. Chief Shaffer and Chief Hawkins are also still here. Do you have any comments on the adequacy of the ambulances?

Mr. HAWKINS. [Conversation from audience; inaudible to court reporter.]

Senator MATHIAS. What is the response time nationwide? What is the goal?

Mr. SHAFFER. I think it is 5 to 6 minutes.

Senator MATHIAS. And what are you up to now?

Mr. SHAFFER. [Conversation from audience; inaudible to court reporter.]

Senator MATHIAS. Chief Hawkins?

Mr. HAWKINS. [Conversation from audience; inaudible to court reporter.]

Senator MATHIAS. Mr. Wilding, air traffic goes up and down. I believe you are experiencing some increase at Dulles at the present time, aren't you?

Mr. WILDING. Yes, sir.

Senator MATHIAS. Does this put any extra emergency responsibility on the Dulles crew, and how do you adjust training and emergency preparedness for an increase in traffic?

Mr. WILDING. Sir, it really doesn't. Dulles, throughout its history has been very, very well equipped in the fire crash rescue area. In terms of all the Federal certifications, requirements, and what have you, Dulles could today take the passenger and aircraft load of the busiest airport in the United States and meet that with flying colors.

Senator MATHIAS. Do you have any similar comment as far as National and BWI are concerned?

Mr. WILDING. Certainly I would make essentially the same statement with respect to Washington National, which I am also responsible for operating. I am sure it is true of BWI as well, although I am less familiar with the details. However, we have great respect for our comrades at BWI in that area.

Senator MATHIAS. The National Transportation Safety Board recommended after the Air Florida crash that the FAA "provide necessary funding for surrounding communities and jurisdictions which will be called upon to support the airports' rescue response." Has anything been done to implement that recommendation?

Mr. WILDING. In our response to all of the NTSB recommendations on that accident, we delved into that particular point by pointing out to them that we really felt that mutual aid agreements were a much better device to forge our relationship with our neighboring jurisdictions. I think it was in January of this year that the NTSB officially adopted that approach and said that with that approach in force it was no longer necessary to think in terms of our funding the local jurisdictions.

So, we are not moving ahead with any plans to fund any of the local jurisdictions. At least from the NTSB's standpoint, they no longer are of the view that that would be a wise course.

Senator MATHIAS. How do your neighbors feel about that?

Mr. WILDING. Well, I would hope that our neighbors recognize that we send quite a few services their way as part of those mutual aid agreements and that we are in effect more than holding up our end of those mutual aid bargains.

Senator MATHIAS. I don't want to start a debate here, but how does Chief Hawkins feel about that?

Mr. HAWKINS. [Conversation from audience; inaudible to court reporter.]

Senator MATHIAS. You heard him.

Mr. WILDING. I sure did. [Laughter.]

Senator MATHIAS. The news reported a month or so ago that there was some dispute between the police and firefighters at National over how you operated a rescue boat.

Mr. WILDING. Yes, sir.

Senator MATHIAS. Has that difference of opinion been resolved?

Mr. WILDING. Probably not to everyone's satisfaction. We have over the last year or 18 months substantially increased our ability to operate out on the Potomac River. We have done so by getting our police department involved in addition to the traditional role which our fire department has played in that.

We believe that by relying on both arms of our public safety resources we are able to feel the great deal more capability out on the river. The fire department has tended to believe that that is something that should remain totally under their control, but I feel very strongly that, with as much total public safety resources we have on the airport, it is best to use both police and fire, both of whom are very well trained for this function.

Senator MATHIAS. So, you cross-train in this function?

Mr. WILDING. Yes, sir. We have made some arrangements with the Coast Guard. These people go for a couple of weeks of very intense training down in Yorktown, VA, before they operate the boats out on the river. Both the police and the fire are very well trained to do it.

Senator MATHIAS. Of course, the police have other functions than responding to emergencies. They control traffic and apprehend law violators of various kinds.

Mr. WILDING. Yes, sir.

Senator MATHIAS. How do you sort out the priorities between this constabulary function and the emergency function? What is the priority?

Mr. WILDING. I think the priority sorts itself very quickly if there is an emergency out on the river where someone is in need of some help in a hurry. Typically we would have, depending on which shift, 15 to 20 policemen physically on Washington National Airport, and we are talking about 4 or at the most 5 of those manning boats and getting out on the river.

We have responsive call-back procedures for some of our off-duty policemen. We have mutual aid arrangements with the U.S. Park Police, who are located right next door, and we are very confident that they can backfill us in the police area in a hurry if we need backfilling.

Senator MATHIAS. But if a police officer has to make a choice, the parking ticket goes with the board.

Mr. WILDING. Absolutely.

Senator MATHIAS. And those are their standing orders.

Mr. WILDING. Yes, sir.

Senator MATHIAS. Let me turn to Mr. Korten for a moment. The question that I am curious about, because I have to make this decision myself on occasion, is how do you coordinate within the Government and with Metro and with anybody else that you might have to coordinate with when you decide on an early release?

No. 1, who gets into this act?

Mr. KORTEN. Well, when it comes to an early release, the situation is always governed by the weather if we are involved. So, we try and coordinate first and foremost with the National Weather Service. We have established a procedure whereby I deal directly with Mr. Laport, who is the area manager of the National Weather Service for this three or four State area. We keep in close touch, three or four times an hour if necessary, to be updated on weather conditions.

If it appears as if some leave decision will have to be made in the course of a day in which employees have already come to work, we also have to consult closely with officials of Metro and the DC government.

One of the problems that we came up against, Senator, a little over a year ago when we really, those of us who came in under the current administration, used the rules that have been on the books for some years for the first time, one of the things that we discovered was that things had changed at Metro since the time those rules were written.

We have much greater reliance now on rapid transit on the rail system. Bus routes, rather than running all the way down town, in many cases terminate at stations well removed from the downtown Washington area.

Other things have changed as well, for example union agreements which preclude their being able to pull in drivers during the middle of the day unless they know by 8:30 in the morning that an early release is likely or probable.

Now, it is rare indeed that we will make a decision at 5:30 or 6 a.m. to call in employees because of our judgment of the weather situation in that case and know less than 2 or 3 hours later that we are going to have to turn around and bring them back in. That is not likely to occur.

The situation in February developed in such a fashion that when we consulted with Metro—and as a matter of fact the first person I talked to that morning at about 4:15 was Mr. Weigle, who was on the preceding panel—we discussed the situation and arrived at the conclusion that although some heavy weather was in store it seemed likely that Metro would be able to handle both buses and subways in the morning rush hour.

We then had a delayed arrival, liberal leave policy which allowed employees to decide to stay home if they wished, but on the assumption that rapid transit and Metro transit would be available, those who felt they could come into work we suggested they come into work.

What changed was that after that 8:30 point had been reached, along about 9 or 9:30 a.m. the storm became more intense. By the time that 10 a.m. rolled around and we found ourselves with one of those storms that comes around once or twice in a century, Mr. Weigle gave me a call and said that it looks as if we are not going to be able to guarantee subway service after midafternoon.

Obviously having brought a lot of employees into town in the morning on the assumption that they would have Metro to get them home again, we were left with no other choice but to arrange for an early dismissal, which as I said was done on a staggered schedule that seemed to work a little bit better.

Frankly, Senator, my judgment is that in the general case early dismissals, because of the changes in the way the Metro system operates, are probably no longer feasible except in the most extreme of circumstances. They probably ought not to be ordered unless the circumstances are overwhelming as they were in February.

Senator MATHIAS. So you would be then operating on an agency by agency basis?

Mr. KORTEN. The release that we directed on February 11 was on an agency by agency basis. It began at 11 a.m., and we released a specified number of agencies, particular agencies, every half hour.

Senator **Mathias**. Did you give the directions to the agencies that they will release at noon, you will release at 12:30, and so forth?

Mr. **Korten**. That is correct, sir.

Senator **Mathias**. They didn't have the option themselves.

Mr. **Korten**. They did not. I should add, however, that prior to the word getting out one or two agencies did release before we made the decision about how to arrange the delay that particular day.

Since that time, however, that list has been firmed up and distributed to agencies. So, they know now that in the future if a staggered dismissal is necessary that is the order in which they will be released, and they are to wait for word from us as to when to begin that kind of a release.

Senator **Mathias**. So the decision is made in one place and the directions are given in one place.

Mr. **Korten**. That is correct, sir. We have what we call an interagency advisory group at OPM at which we routinely deal with an array of personnel matters with the personnel directors of all of the agencies, and it is through that network that we are able to disseminate this kind of information quickly and effectively. The information, by the way, in February was also disseminated through the new White House electronic mail system which gets the stuff out instantaneously, and I think we will probably be making more use of that kind of system in the future.

Senator **Mathias**. So, that gets the information to the agencies.

Mr. **Korten**. That is right.

Senator **Mathias**. How do they get the information to their employees?

Mr. **Korten**. Well, of course, each agency is responsible for establishing the means of communicating word about early dismissals should they be necessary within their own agencies. However, by and large the personnel offices set up a system whereby there is a key individual who has administrative responsibilities of one sort or another in each major office, and they are contacted directly by the personnel office.

Senator **Mathias**. Mr. McLoughlin, as you pointed out there are a number of emergencies around the country today, some declared by Presidential proclamation or Presidential finding. However, what short of a Presidential declaration is FEMA's statutory authority to assist a local area?

Mr. **McLoughlin**. Are you talking about specifically in the response area, Senator?

Senator **Mathias**. Response area, yes.

Mr. **McLoughlin**. The Reorganization Plan No. 3 that established FEMA and the Executive order that implemented that does provide for us to coordinate all Federal planning, assistance, mitigation, and response activities. So, we do have authority to provide for the coordination of the Federal activity in support of State and local efforts.

Senator **Mathias**. What is more important? Is the plan the important thing, or is the local response capability the important thing?

Mr. McLoughlin. From our perspective both are, Senator. Clearly the response is lifesaving and the property protection aspect are obviously the central thrust that must be provided.

However, clearly all of the evidence that we have had over time suggests that preparedness efforts and putting reasonable resources into preparedness activities, particularly in the training areas as the previous panel identified, has a payoff in the response area.

Senator Mathias. At our first hearing on this subject, there were a number of local officials who indicated that they needed to have one contact with the Federal Government for assistance in emergency preparedness. Presumably that would be FEMA. Is FEMA prepared for this responsibility? Are we right that you are the man they should contact?

Mr. McLoughlin. Again, Senator, are you talking about in the response area?

Senator Mathias. In the emergency response area.

Mr. McLoughlin. Clearly that is the responsibility that we see and we do believe we have as an agency. We have been working with all of the agencies and their emergency preparedness people to try to deal with a better coordinated Federal response.

Let me just qive you a couple of examples. I just recently came back from the nuclear weapons accident activity exercise that we had out in the Nevada test site sponsored jointly by the Department of Defense, the Department of Energy and FEMA in which our whole effort was to try to look at the coordination assets of the Federal Government and how it would be brought to bear in this case supporting the State of Virginia. We had about 60 people and their equipment from the State of Virginia at the test site in order to simulate State and local efforts as well.

Last fall we had an exercise, and we plan another one this year, on trying to coordinate the Federal response to another Three Mile Island, the Federal response to assist State and local governments around fixed nuclear facilities.

Senator Mathias. Now, should Chief Hawkins call directly to FEMA, or does he have to call Richmond and then expect Richmond to call FEMA?

Mr. McLoughlin. Well, as a Federal agency working day to day with State and local governments, we do indeed have to respect the rights of the States and their operational response.

In most instances, our general form of response is to work through our regional office with State governments. Now, clearly in the case of the District of Columbia, the District is considered a State in that case, and they are within the confines of our region III office in Philadelphia.

So, normally Virginia and Maryland, we would expect local governments to operate through their State emergency services people. That is principally because the State indeed may also be able to provide for support to the State through local activities, and Federal support may not be necessary.

In the case of the District, we have made special arrangements with our regional office that, while they take care of all of the mitigation, preparedness, and the recovery efforts, because we are located right here in the District it is true that we would respond out of our national office and try to provide assistance among the Federal families.

Senator Mathias. I am not sure that every State would have a State fire marshal. Maybe they do; maybe they don't. However, suppose there either isn't a State official that Chief Hawkins could go to or maybe they had a fuss at the last fireman's convention and don't talk or there is some kind of bureaucratic problem. Is there any kind of recourse for the local community if that kind of situation exists?

Mr. McLoughlin. Senator, that is a ticklish kind of question to respond to, but let me see how I can do it.

Senator Mathias. It's a ticklish kind of problem.

Mr. McLoughlin. That is right. Clearly, all States do indeed have emergency services organizations. We work with them through our regional offices on a day-to-day basis. So, we are well aware of the capabilities within each State.

In our experience, while we clearly want to work through our State efforts, we do recognize that local governments sometimes may have difficulties as you have expressed. Our experience is that those local communities normally find a way to deal with that situation, that is they are responsive to the situation itself. Sometimes it may mean that the State is advised after a Federal agency is contacted.

Senator Mathias. What steps would a local official have to take in order to get equipment from the military during an emergency?

Mr. McLoughlin. Well, I represent FEMA, Senator, and not the Department of Defense, but as a coordinating agency we are clearly knowledgeable of what the DOD policy is in this area.

Senator Mathias. I would hope that the head of the fire department in Annapolis, MD, is already on good and personal terms with the fire officials at the Naval Academy. Let's say that somebody further afield needed equipment.

Mr. McLoughlin. You have hit the key point right now, but let me answer your question directly and then come back to that if I might.

In general, the DOD policy is that the local base commander, or installation commander, has the authority under eminent danger to provide whatever assistance he believes is necessary to support State and local government. That decision is the military commander's decision.

There are numerous instances in which the Department of Defense has provided assistance directly. Where differences have occurred in the past is in the nature of what eminent danger means. We have talked about the snowfall in February, for example, and there may be many who would argue that eminent danger results from that kind of snowstorm.

In many instances the local base commander, who may have equipment for that, may not recognize it or may not see it as an eminent danger sort of issue. Therefore, the military equipment there would not normally be available.

However, you have hit the key issue in your opening comments, and that is what we try to recommend and urge State and local governments is to make contact with local base commanders, installation commanders, so that they do indeed have an understanding of under what sorts of circumstances their resources might be available.

Senator MATHIAS. But from FEMA's point of view this is to a large degree a matter of local initiative.

Mr. McLOUGHLIN. Yes, that is correct. Now, in the case of a declared disaster or in the case of a unique disaster like the Air Florida crash here, we were instrumental in bringing to the scene the Navy divers and the Army divers and other military resources that were involved in the rescue attempts.

Senator MATHIAS. Chief Hawkins talked a little bit about integrated emergency planning. Why has FEMA moved in this direction?

Mr. McLOUGHLIN. Well, FEMA was born by bringing five agencies together to provide for a more integrated emergency management assistance activity at the Federal level. We had the Civil Defense Administration separate from the disaster relief activity, separate from the flood plain management activity, and so forth.

Given that fact, it has been an evolutionary sort of activity in our agency. We were only born in 1979, and 3 or 4 years later we are talking now about integrating across all——

Senator MATHIAS. Senator Warren Magnuson, of course, was the moving figure in putting FEMA together. I don't know whether he had some premonition that Mount St. Helens was going to blow up in his State and that he wanted to get ready. [Laughter.]

In any event, I well recall those events. However, that is the direction in which you are moving.

Mr. McLOUGHLIN. Yes, very definitely. The bottom line, Senator, is the fact that there is such a commonality of functions across all disaster activities, peace time as well as wartime disasters. We talked about warning systems, communications systems, direction and control activities. All of these require essentially the same kind of response.

While there are differences in hazard-specific kinds of responses, we also are limited with our funds in the agency, and we feel that the direction we ought to be supporting State and local governments is across that common set of functions.

Senator MATHIAS. FEMA has been requested to participate in and to provide some support for COG in the development and implementation of the metropolitan emergency action plan for the National Capital area. What have you actually done so far?

Mr. McLOUGHLIN. In the way of providing specific financial support in response to that report, I would say we have not provided it at this point.

We do have a member of our region III staff out of Philadelphia that sits monthly with the Emergency Preparedness Subcommittee of the COG activity. That is the principal means of our interfacing with the group.

We do provide, as you undoubtedly know, both 100-percent money and matching money to Virginia and Maryland and to the District. We are providing this year in the neighborhood of about $530,000 to the District and over $3 million to both Virginia and Maryland.

One of our principal concerns at the moment is the utilization of that money that we are providing right now to the jurisdictions. I think that some of that may be underutilized.

Second, as was expressed by the first panel, there still appears to us to be maybe not as sharp a focus for what the real requirements are for COG in terms of our support. What we are wanting to do and are prepared to do is to work with COG in order to try to sharpen that focus and see what specific effort we can sustain.

Senator MATHIAS. My ear is tuned to words like that. Are you saying that if there isn't a sharper focus that support may not continue?

Mr. MCLOUGHLIN. Well, we are not supporting COG right now.

Senator MATHIAS. I don't take it as a threat.

Mr. MCLOUGHLIN. No. We are not supporting COG right now with any specific funds. The point that I was making is that we do have funds in Virginia, Maryland, and the District. Our intent at the moment is that we believe a lot of those funds could be more effectively used.

The question then is the additional funds that COG has asked us for, and it is at that point in time that—we do not have a strong feeling at the moment that those specific funds—knowledge of where those specific funds would be used.

They have asked us, for example, for training money, additional training money. We put $28,000 in Maryland. We put $5,000 in the District. We put $115,000 in the State of Virginia. This is all 100-percent money for training activities. In addition to that, we have our National Emergency Training Center up at Emmitsburg that will also provide support. In fact, COG acknowledges the fact that we could indeed provide some of the training through that facility, which we are prepared to do.

Senator MATHIAS. Well, I think what you just said is important because it is advisory to COG, it is advisory to Maryland and to Virginia and to the District of Columbia as to attitudes that they may encounter in this respect.

Is there anything that any of you would like to add to complete this record? Is there anything that you would like to see the Congress do? Here is a chance to speak up without having to clear it through OMB. [Laughter.]

Mr. MCLOUGHLIN. We have a budget request before the Congress which is pending. We clearly look for support for that.

Senator MATHIAS. I have one final question for Mr. Wilding. It may be the most difficult question I have asked of any witness all day. How are you going to move traffic at National Airport on Sunday afternoon?

Mr. WILDING. We are sure working on it.

Senator MATHIAS. The ground support system at peak periods is almost saturated, is it not?

Mr. WILDING. Yes, sir. There are ways of dealing with that physically, we believe, and we are in a planning process right now which is really 10 or 12 years too late. As you know, the whole issue of Washington National has been bantered about quite a bit over the years.

Senator MATHIAS. I have heard about it.

Mr. **Wilding.** We finally have in place a policy which is really a policy of constraining the growth at National. Now that we think we know what role National is to play in the long term, we are about trying to figure out how physically to make it play that role at a much, much higher level of service than is provided to its passengers right now.

Senator **Mathias.** Well, it may not be of an emergency character, but it can be almost an emergency when you get locked into that circle on a Sunday afternoon or a holiday period. So, we will look forward with great interest to the ideas you have for speeding that up.

Mr. **Wilding.** Yes, sir.

Senator **Mathias.** Thank you all very much for being here.

[The prepared statements of Messrs. Wilding, Korten, and McLoughlin follow:]

STATEMENT OF JAMES A. WILDING, DIRECTOR OF THE METROPOLITAN WASHINGTON AIRPORTS, FEDERAL AVIATION ADMINISTRATION, BEFORE THE SENATE COMMITTEE ON GOVERNMENTAL AFFAIRS, SUBCOMMITTEE ON GOVERNMENTAL EFFICIENCY AND THE DISTRICT OF COLUMBIA, CONCERNING EMERGENCY READINESS.

Mr. Chairman and Member of the Subcommittee:

I am James A. Wilding, Director of the Metropolitan Washington Airports. As you know, both Dulles International and Washington National Airports are owned and operated by the Federal Government. The Federal Aviation Administration (FAA) is the controlling Government agency. Within the FAA, the Metropolican Washington Airports is the organizational element which is directly responsible for the operation of both airports.

Emergency planning and response at Dulles and National Airports is performed by the Metropolitan Washington Airports organization including Police and Crash-Fire-Rescue services at each airport. We maintain a substantial capability for handling emergencies which might arise at the airports. Assistance is available, if needed, through mutual aid arrangements with local jurisdictions and other Federal agencies in the area.

Before proceeding with specific responses to the Committee's written questions, I would like to emphasize FAA's continuing commitment to the maintenance and improvement of emergency response capabilities at Dulles and National Airports, through both in-house resources and cooperation with other local public safety organizations. While we learned a great deal from the Air Florida crash of January 13, 1982, the enhancements in the airports' emergency response capability since that time are not simply a reaction to the circumstances of the accident. Many such enhancements, including the acquisition of new river rescue boats and upgraded communications equipment, for example, were initiated before the Air Florida accident. Other revisions have resulted from our ongoing assessment of capabilities, including periodic disaster drills conducted in coordination with other local public safety agencies and area hospitals.

The Committee's letter of February 15, focuses on the present state of emergency preparedness at Dulles and National Airports. I will address the Committee's written questions in the order presented in its letter.

1. The Committee's first question concerns the compatibility of airport emergency plans with those of other local jurisdictions. We believe the emergency response procedures incorporated in the Dulles and National Airport Emergency Operating Manuals are entirely compatible with the emergency plans of local jurisdictions. An Emergency Operations Manual is maintained for each Airport, covering specific procedures for various emergencies ranging from natural disasters to aircraft hijackings. The manuals are updated periodically to incorporate new information on equipment, communication systems, and revised operating procedures. The Dulles and National Airport Emergency Operating

Manuals provide for notification of local jurisdictions affected by an emergency situation, and the manuals have been furnished to local jurisdictions to enhance coordination in the event of a mutual aid call.

As with other local jurisdictions, Metropolitan Washington Airports has primary responsibility for emergency response within its own political boundaries, in this case, the airport boundary. These boundaries are clear, and responsibility for emergencies at any given location in the region is also clear.

In accordance with existing mutual aid agreements, the airports may call on surrounding jurisdictions for assistance in airport emergencies or respond to requests for assistance by another jurisdiction. The continuing compatibility of the respective emergency management plans at Metropolitan Washington Airports with those of the other local jurisdictions is assured by the clear division of responsibility, by mutual aid agreements, and by continuing routine contacts between our public safety people and public safety personnel of other local jurisdictions.

2. The Committee's second question relates to the types of emergencies for which the airports are prepared, and the availability of resources to respond. Metropolitan Washington Airports is equipped to respond to any foreseeable type of emergency situation at the airports. Primary concerns are the ability to handle aircraft crashes and structural fires. Because the requirements for each are somewhat different, FAA maintains specialized equipment for aircraft accidents and conventional fire apparatus for structural fires. Aircraft crash

equipment includes fire trucks capable of dispensing foam and chemicals as well as water, and other specialized equipment for fuel fires. FAA also maintains four boats at National Airport in support of the primary river rescue mission of the D.C. Harbor Police. The largest FAA craft is a 40-foot steel-hull cutter with the capability to break through ice up to 4" thick. All FAA boats and many of the crash vehicles carry rafts and other flotation devices.

FAA public safety personnel are also trained for accidents involving hazardous substances, including toxic chemicals and biological and radiological materials.

Airport firefighters and police officers are trained as Emergency Medical Technicians to provide initial medical coverage in an airport emergency. At present, more than a third of airport police officers and nearly 90 per cent of airport firefighters are certified by the Commonwealth of Virginia or the National Registry as Emergency Medical Technicians. Both airports maintain certified EMT crews 24 hours a day, and have fully equipped life support ambulance units. Additional support in medical emergencies at both airports is provided by local hospitals and ambulance units. FAA has formal arrangements with National Orthopaedic and Loudoun County Memorial Hospitals and can also send patients to other local hospitals and trauma units. FAA includes many of these facilities in airport disaster drills.

3. The Committee's third question asks if the Airport Emergency Operations Manuals are consistent with recommendations made by the Council of Governments Metropolitan Emergency Response Task Force in a report dated May 19, 1982 and in

a subsequent report on action plans dated January, 1983. Again, I would note that while FAA has been responsive to COG recommendations for changes in the airport Emergency Operations Manuals, the Manuals have always been fundamentally compatible with those recommendations and major revisions have not been required.

The May 1982 report contained several specific recommendations relating to the Metropolitan Washington Airports. First, it was recommended that FAA extend the National Airport secondary response area north to Memorial Bridge, east to include the Potomac River, and south to the Wilson Bridge. The secondary response area is the off-airport area in which Metropolitan Washington Airports will respond automatically to an aircraft accident, without waiting for a mutual aid request. The boundaries of the National Airport secondary response area had been extended to the limits I have just described prior to publication of the COG report.

Second, COG recommended better coordination in disaster planning and response between the airports and the local jurisdictions, with four areas of emphasis: communications; training of airport personnel regarding their role in regional disaster exercises; integration of Trauma Center resources; and direct involvement in annual regional disaster drills.

With respect to communications, it was recommended that the Airports integrate their emergency communications with existing Metro area disaster response procedures. To the extent such integration was not already in effect, it has been implemented. Both airports maintain FMARS (Fire Mutual Aid Radio System) and NOVA (Northern Virginia Mutual aid Frequency) frequencies. In addition, Dulles Airport has the Fairfax County and Loudoun County Fire Ground Emergency Channels, and National Airport has the Arlington County Fire Emergency Channel. Radio equipment using these frequencies is maintained on all structural apparatus and ambulances and on the larger crash trucks, on the Fire Chief's vehicle and Deputy Fire Chief's vehicle, and in the station communication centers. Airport ambulances are also on EMS Channel I. Our Communication Center at National Airport also maintains direct phone lines to the District of Columbia Harbor Police and Fireboat Operations, to the D.C. Police Helicopter Unit at National Airport, and to the Arlington County Emergency Operations Center. Additionally, our river rescue boats have the radio equipment and frequencies for direct communication with the D.C. Harbor Police and the Coast Guard. This communications capability, in conjunction with agreements on procedures for use of the various frequencies and channels, provides a comprehensive communications network between Metropolitan Washington Airports and other jurisdictions and agencies in the region.

With respect to integration of Trauma Center resources, and training and participation in regional disaster drills, it is our belief that FAA's efforts in each of these areas have been and continue to be maintained at an appropriate level. Utilization of hospital emergency unit resources has been accomplished through the participation of the medical directors in FAA's Emergency Medical Technician program. Integration of the resources of the Medstar Trauma Center and other regional Trauma Centers can be accomplished through coordination with COG. FAA crash fire rescue personnel receive training on a periodic basis in regional exercises, and frequently receive off-airport training from such sources as other fire departments. Periodic disaster drills are conducted by FAA at the Airports for both land and water situations, with the participation of the local agencies and organizations which would become involved in an actual emergency of that nature. FAA is willing to participate in any other regional exercises reasonably related to each airport's situation and response capability.

With regard to the Emergency Response Action Plan proposed by COG in January, FAA supports the recommended actions in the plan and will cooperate in any tasks in which we have the ability to contribute. In view of the airports' present communication capabilities and existing mutual aid agreements, we believe the airports are already in substantial compliance with the ultimate goals of the plan.

4. Coordination of Dulles and National Airport public safety officials with their counterparts in neighboring jurisdictions is extensive and successful. This coordination takes several forms. First, Metropolitan Washington Airports is party to several mutual aid agreements with local jurisdictions. Agreements have long existed for fire rescue emergencies with Arlington County, Alexandria, Fairfax County and Loudoun County. A formal agreement has been proposed by FAA to the District of Columbia but has not yet been executed; however, FAA and

District public safety personnel routinely cooperate on operational matters by informal agreement.

Second, FAA Airport police and crash fire rescue personnel work with the Park Police, the public safety personnel of Northern Virginia local jurisdictions, and the D.C. Harbor Police on a daily basis. Cooperative efforts relate to structural fires, auto accidents, law enforcement incidents, boating emergencies, and other routine emergency response situations. Cooperation may be incident to the mutual aid agreements I have just mentioned or to more informal arrangements. This routine coordination is facilitated by the various networks of mutual frequencies and direct phone lines available between the airports and local public safety units.

Third, airport personnel cross-train with public safety personnel of local jurisdictions, so that each has direct knowledge of the equipment and geography which will be encountered in a mutual aid call to the other's jurisdiction. Also, the certification of airport police officers and firefighters as Emergency Medical Technicians by the Commonwealth of Virginia permits airport personnel to share common procedures and terminology with their counterparts in Northern Virginia jurisdictions.

Finally, airport public safety officials participate extensively in regional professional associations. For example, Metropolitan Washington Airports crash fire rescue officials participate in the regular meetings of the Metropolitan Fire Chiefs, the Virginia Fire Chiefs, and the COG Fire Chiefs' Committee, including subcommittees on training, communications, and disaster planning. Metropolitan Washington Airports is also a member of the Federal Fire Service Task Group, and our fire chief is presently chairman of that group.

In summary, we believe our emergency readiness planning is sound, current, and consistent with overall regional planning. We are well equipped and well trained. More importantly, our public safety people are very proud of their ability to respond quickly and well to emergency situations, we are quick to solicit assistance from our neighbors when we need it, and are also quick to give it when our help is needed by others.

That concludes my prepared presentation. I would be pleased to answer any questions the members of the Committee might have at this time.

Testimony Before the Subcommittee on Governmental Efficiency

and the District of Columbia

Senate Governmental Affairs Committee

Wednesday, May 18, 1983

by Patrick S. Korten
Executive Assistant Director for Policy and Communications
U.S. Office of Personnel Management

Mr. Chairman and members of the Subcommittee:

There are, as you know, a lot of thankless jobs in the government. Those of us at OPM know a lot about that. By the same token, those intrepid forecasters at the National Weather Service have what is perhaps the ultimate thankless job. They are skilled scientists in what is necessarily an inexact science.

Indeed, the forecasters had been having a rough time of it. Less than a week before the big storm, they'd talked up a winter storm that purportedly had the potential for as much as a foot of snow, and we got just a few inches. Two days after the storm, they were predicting one to three inches of snow mixed with sleet and freezing rain. My friends at Metro suggested on Sunday afternoon that we shut the government down for Monday based on that forecast. We didn't get a drop. During the several weeks that preceeded the snowstorm of February 11, 1983, it seemed that I could hardly turn around when someone was shouting, "The weathermen are predicting snow again -- I wonder how far off they'll be this time!"

This is not a criticism of the weather forecasters. The Washington, D.C. area is one of the most difficult in the country in which to make a forecast under these conditions, since the movement of the track of a storm of only 15 or 20 miles can mean the difference between a foot of snow and nothing at all. In making decisions regarding leave policy for Federal employees in the Washington area, we take all this into account, and make our best judgement as to how things will actually turn out. Whatever procedures we may have for gathering information and coordinating with local governments, in the final analysis, it still comes down to a judgement call when a snowstorm approaches.

On February 11, our decision regarding Federal employee leave policy was to implement a "delayed arrival/liberal leave" policy, which allowed each individual employee to make a personal decision about whether the commute he or she faced was advisable that day or not. The next morning, the Washington Post, which is not generally known for endorsements of OPM policy, endorsed our decision, syaing, "there was no overwhelming reason to just give everyone an extra day off. . ." As they noted, "for most employees, the option to stay home was there from the start."

How Hazardous Weather Leave Decisions Are Made

Decisions on special leave policies, if any, when severe weather strikes, are made based upon a number of guidelines and procedures. General policy guidance is contained in the Federal Personnel Manual. Procedures for gathering information and coordinating with local governments are arrived at within the Office of Policy and Communications at OPM, and are the result consultation with officials of the D.C. government, the Washington Metropolitan Area Transit Authority, and the National Weather Service.

OPM official guidance defines an "emergency situation" as "one which may prevent employees in significant numbers from reporting for work, or may necessitate the closing of Federal activities in whole or in part." It provides that such a situation "must be general rather than personal in scope and impact," and may be caused by such natural events as "heavy snow or severe icing conditions." It states that "usually, significant emergency situations, of the scope and impact reflected in these guidelines, will be the subject of a public declaration of emergency or disaster by approprirate State or local authority." Second, it provides that "the health and safety of employees in these emergency situations is a matter of prime concern to the government."

I should note here that the declaration of a "snow emergency" by local jurisdictions in the Washington area is not the sort of public declaration envisioned in the FPM guidance. Here, such a declaration simply means that parking is prohibited on snow emergency routes, and snow tires or chains are required on vehicles which venture out into the snow. These declarations are routinely made even when the snowfall amount is relatively light, and under circumstances which would not justify any special leave policy for Federal workers.

How, then, do we decide whether a weather situation merits special attention, and if so, what out-of-the-ordinary policy is needed to deal with it? Certain general principles apply:

Determination that an emergency exists -- Making this determination is not as simple as it may sound. Our official guidance provides that "Sometimes a condition occurs which leaves no doubt about its severity and potentially adverse effect on employees." Some would argue that was the case on February 11 here in Washington. But the guidance goes on to read, "In other situations, such as rising flood waters or the forecasting of severe weather conditions (emphasis added), a determination must be made on the potentiality of that condition for creating disruption of work or transportation, or hazardous driving conditions."

Decision on Impact of the Condition on the Federal Population -- Here there are several possible alternatives. Federal offices may be open as usual, they may be open with a "delayed arrival" policy, they may be open with a "liberal leave" policy, or they may be shut down entirely.

Information gathering and coordination are the responsibility of my office at OPM. We have established internal procedures which ensure that:

-- Information is gathered on the weather from the National Weather Service, on road conditions from area highway departments and other appropriate sources in all local jurisdictions, and on the effect which adverse weather may have on mass transit operations from officials of Metro;

- -- Effective coordination of leave policies is achieved between the Federal and District governments;
- -- The Director of OPM is kept fully informed when severe weather conditions develop;
- -- Immediate communication with appropriate officials at the White House is provided for at all times during such situations;
- -- When severe weather develops outside normal business hours, all information gathering and coordination with local governmental and transit officials takes place early enough to permit a full and complete report to the Director by 5:30 a.m., allowing an announcement of official leave policy through local media by 6:00 a.m.;
- -- When severe weather develops during normal business hours, special leave policy (early dismissal) is adopted only after full and satisfactory coordination with the District government and Metro;
- -- Once a leave decision has been made, weather and road conditions are monitored on a continuous basis, to allow adjustments in policy if they should become necessary.

What Kind of Emergency Did We Face on February 11?

In the case of the snowstorm which struck the Washington area on February 11, judgement had to be applied to the interpretation of weather forecasts available at the hour at which a decision on leave policy had to be made. At 4:15 that morning, I received a call from Mr. Weigle, of Metro, who is also a part of the panel this morning. He filled me in on the predictions of a private forecaster, which predicted 11 inches of snow on the ground by the time the storm was expected to subside that evening. A forecast of roughly the same magnitude was received shortly afterward during my conversation with the lead forecaster on duty at the National Weather Service office in Camp Springs. At this point in the morning, only 2 to 3 inches of this total was on the ground. Mr. Weigle felt that Metro would be able to get through the morning rush hour in pretty good shape despite the snow, and he turned out to be correct. No significant delays were encountered during the morning rush on Metrorail, and all but a handful of bus routes were run.

With this in mind, and with a significant amount of additional information in hand from all Washington area highway and traffic departments and police agencies, we proceeded to make our best judgement based on the available data.

We reached the following conclusions:

a. Some difficulty in driving and considerable commuting delays were likely during the morning rush hour, especially for those with longer commutes.

b. Given the wide geographic dispersal of Federal employees in the Washington area, and the fact that many such employees work at installations outside the beltway as well in the District itself, many thousands of employees could be expected to be able to commute to their offices successfully and safely, if a bit slowly.

c. The availability of the Metrorail system meant that large numbers of employees would have available to them a mode of transportation into the heart of the downtown area which was expected to remain available, and which was safe and not dependent upon highway conditions.

d. If snowfall continued at the rate anticipated in the forecasts available between 4 and 5 a.m., there was a reasonable prospect that road crews would be able to "keep up" with that snowfall on major commuter routes. This belief was predicated, of course, on the assumption that employees coming in to work would remain in their offices during mid-day, allowing plowing crews relatively unfettered access to roads and highways.

e. The forecasters might be wrong. This is no reflection on them; again, Washington, D.C. area is one of the most difficult in the country in which to make a forecast of a winter storm.

f. Clearly, some commuting delays were to be expected, with the potential for a large snowfall. Thus, a leave policy for Federal employees which took into account the heavy snow storm and its possible effects on commuting to work was called for. In the end, we chose a course which allowed employees themselves to make the decision, based on their own circumstances, regarding whether to come to work.

A Policy Matching the Expected Impact of the Storm

On February 11, clearly it would have been inappropriate to open Federal offices "as usual." At the very least, a "delayed arrival" policy, "based on conditions developing during nonworking hours which make it difficult for employees to arrive at work on time," was called for. FPM guidance declares that such a policy is appropriate, for example, "as a result of an ice storm which has made roads treacherous and delayed transportation." Allowing a limited amount of administrative leave in such circumstances is to be granted based on: "Distance between the employee's residence and place of work; mode of transportation normally used; efforts by the employee to get to work; and success other employees similarly situated had in being able to report to work."

We may also, in such circumstances, adopt a "liberal leave" policy, in a "situation in which the emergency conditions are not uniform in their effect on the area. That is, the entire Federal sector is not severely impacted, but there are areas so seriously affected that employees are prevented from getting to work." Under such a policy, an employee is asked to decide for himself or herself whether a commute may safely be made between residence and work place, taking into account the factors listed above under "delayed arrival" policy. If the decision is that the trip cannot be safely made, then they are advised to take the opportunity to take annual leave, which is granted in such circumstances without the need to obtain a supervisor's approval beforehand.

In the most extreme circumstances, Federal offices may be shut down altogether. This would happen when a storm or flood "obstructs all modes of transportation to a worksite. . ." In this event, all employees are granted administrative leave. Such emergency conditions normally "can be expected to prevail for no more than one or two days." Anything more would be the result of a "major catastrophe."

Based on the information available to us at 5:00 a.m. on February 11, the conditions for a complete shutdown of Federal offices in the D.C. area did not appear to be present. All of those contacted felt that travel during the morning rush hour would be feasible, if difficult for some. That left us with a judgement to be made about developments which might occur during the balance of the day. We also took into account the fact that many employees live in relatively close proximity to Federal offices outside the immediate downtown area, and that many more would be able to use Metrorail service to reach their offices, we concluded that the snow would not prevent significant numbers of employees from successfully getting to and from work that day.

In recognition that many others, especially those living outside the beltway who must commute all the way into the downtown area, might find it difficult to make such a trip, we decided on a delayed arrival/liberal leave policy. This allowed any employee who did not feel that such a commute could be made successfully or safely to stay home that day, and many did so. A survey of departments indicates that an average of 75% of employees used the opportunity to take annual leave that day.

The Decision to Dismiss

As we all now know, the snow storm of February 11 exceeded the predictions of the most pessimistic forecasters, public and private, in the D.C. area. Where it had been billed as a storm with the potential for a foot of snow, it dropped up to twice as much, virtually crippling the area's transportation system.

The intensity of the storm increased dramatically just as the morning rush hour was drawing to a close. By 10:00 a.m. it was becoming apparent that much more than a foot of snow was going to fall, and at 10:15, I received a call from Metro indicating that they were now unable to guarantee Metrorail service after about 3:00 p.m. At this point, another factor had changed for the worse: while initial forecasts had called for temperatures remaining in the mid-to-upper 20s, the mercury had dropped instead down into the teens, where it was to remain for the balance of the day. For road crews, this was bad news, since it meant that the use of salt on area roads would not be practical or effective. Salt just doesn't work below 24 degrees or so.

Based on this new information, we were forced to reconsider our original leave policy. We could not leave thousands of employees who rely on Metrorail stranded without any means of transportation. And there was now the prospect that those relying on bus or auto transportation would not be able to travel on highways where road crews were now fighting a losing battle. After quick consultation with Metro, the D.C. Transportation Department, the D.C. Personnel Department, and the White House, we sent out word that employees would be dismissed early, on a staggered schedule by agency.

Conclusions

There are several very important facts which must be taken into consideration anytime a severe weather situation develops here. The first, and most important, is the fact that Federal employees perform tasks which are extremely important and which should not be abandoned lightly, or in panic at the sight of the first snowflake. Whether these employees are ensuring the delivery of a pension check, preparing for the launch of a space sattelite, gathering data on the basis of which millions of financial decisions will be made in the private sector, or tending to the safety of the environment in which we live, their tasks are of vital importance. They do not become any less important when it snows. They are all the more important here in the Washington area, because a shutdown of agency headquarters operations affects installations and offices all over the country and indeed, the world.

A second factor to be considered is the opinion held by the general public toward government workers. Most private sector workers do not benefit from the kinds of special leave policy we occasionally employ for Federal workers, and we know from the volume of phone calls and mail we receive that special leave policies are frequently resented by private sector employees who must go to work even when it snows. We still feel, of course, that there are situations in which such leave policies are called for, but we do the Federal employee no favor if we allow such leave when it is not really needed.

A third factor, refered to earlier, involves the geographic dispersal of Federal offices around the Washington area. For example, the U.S. Geological Survey estimates that 29% of the 2,700 employees working at its Reston, Virginia offices live within five miles of work. Should we cancel a work day for them because someone who lives in Annapolis might have trouble getting to downtown Washington? I think you'd agree that we should not. Because of this, a "liberal leave" policy, which leaves the decision on whether to come into work in the hands of each employee, to be based on their own individual circumstances, seems to us to be the most logical choice in a snowstorm situation of all but the most extreme variety.

As the Post noted in its day-after editorial, "The one party in a Washington snowstorm that invariably takes a lot of heat is the faceless bureaucrat who makes the call on whether federal employees should go to work." I've certainly taken plenty of heat on this one, Senator, but we're still in the kitchen. We take our responsibilities in this area very seriously, and are glad to have had the opportunity to share our views with you this morning.

We would welcome any suggestions this body has with regard to response to emergency situations in the Washington area, and stand ready to discuss improvements which might be made in our system at any time.

Thank you, Mr. Chairman.

Statement by Dave McLoughlin
Deputy Associate Director, State and Local Programs and Support
Federal Emergency Management Agency

before the

Subcommittee on Government Efficiency and
the District of Columbia
Senate Governmental Affairs Committee

May 18, 1983

Mr. Chairman,

I am representing the Federal Emergency Management Agency, General Louis O. Giuffrida, Director, in response to the Chairman's invitation of February 24, 1983.

We appreciate the opportunity to participate and share information regarding the programs and policies administered by FEMA in support of State and local governments. All such emergency management efforts can be related to what we refer to as Comprehensive Emergency Management. It has as its objectives preparedness for, response to, recovery from and mitigation of all emergencies whether caused by natural or technological hazards, peacetime accidents or man made emergencies including attack upon the United States.

There are a number of specific deliverables which are available to State and to localities, most of which have and are being utilized by the District of Columbia and other localities in the Washington Metropolitan Area. These include:

1. Emergency Management Assistance Funds - 50 percent matching for salaries, travel and expenses to operate the Emergency Management offices.

2. Population Protection Planning - 100 percent funding of State level planners.

3. Radiological Defense Planning - 100 percent funding of State level Radiological Defense planners.

4. Disaster Improvement Grants - 50 percent funding of State projects that address disaster preparedness needs.

5. Facilities Surveys - 100 percent funded surveys of buildings to identify protective features and emergency lodging capacity.

6. Radiologial Systems Maintenance - 100 percent funded maintenance of radiological instruments that have been granted to States and localities.

7. Communications and Warning Systems - 50 percent funding of emergency Communication and Warning Systems upgrading. In the Washington Metropolitan Area, FEMA fully funds a dedicated land line alert and warning systems that connects all jurisdictions and most police and fire dispatch locations, a radio back up to key points on the land line system, all outdoor warning sirens and local control activation to permit selected use in peacetime emergencies where called for by local plans.

8. Emergency Operating Centers - 50 percent matching funds for the design, construction and operational equipping of emergency operating centers and mobile command centers.

9. Maintenance and Recurring Costs - 50 percent funding for maintenance of communication and warning and EOC and recurring charges on electrical and control lines on emergency systems. Maintenance and line charges on the Federal system serving Washington is paid 100 percent by FEMA.

10. Emergency Management Training - 100 percent funding of costs to train in emergency management skills plus access to courses conducted by FEMA at our Emergency Management Institute and Fire Academy at Emmitsburg, Maryland.

11. Broadcast Station Protection - 100 percent funding to radio stations to provide protection of personnel, emergency power and communications linkage to State or local emergency operating centers.

12. Disaster Assistance - When severe disasters occur that justify a Presidential Declaration, broad relief and recovery assistance is authorized to the affected community.

Through the facilities of our Regional offices, we provide technical assistance. We also administer for high hazard areas programs that address Earthquakes and Hurricane Preparedness and Flood Plain Management assistance.

Under various extraordinary conditions, FEMA has Emergency Response Teams at National and Regional levels prepared to report to the scene to coordinate Federal relieve and assistance needed and authorized. These teams would operate in conditions such as an accident at a fixed nuclear facility; certain terrorist acts or threats where our concern is for the potential or actual consequences. The principle of the Emergency Response Team came into play during the Air Florida accident of January 13, 1982.

These are the highlights of the support available from FEMA. Obviously, we have policies and criteria concerning eligibility and allowable costs and we must prioritize demands for assistance where our appropriated funds are inadequate to meet all requirements.

It is our policy to encourage interstate coordination and planning. More specifically, it is FEMA's intention to implement all such assistance as an integrated emergency management system. By this approach we encourage the development of organizations, planning, emergency systems and facilities and training to produce preparedness and operating capabilities to deal with all emergencies that a community may be likely to suffer based on its analyses of its hazards and vulnerability. In so doing, we better support the communities priority concerns and also fulfill our obligation for preparedness for attack and our national security obligation.

With that general description of our programs and policies, all of which relate to emergency management concerns in the Washington area, I will be happy to answer any questions or details you desire.

Senator MATHIAS. The subcommittee will stand in adjournment, subject to the call of the Chair.

[Whereupon, at 11:45 a.m., the subcommittee was adjourned.]

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

COOPERATIVE WATER SUPPLY OPERATIONS ON THE POTOMAC (CO-OP)

Thomas A. Andrews, Chairman
Thomas M. Schwarberg, Jr., Vice-Chairman
Daniel P. Sheer, Director

March 14,1983

Senator Charles McC. Mathias
358 Russell Senate Office Bldg.
Washington, D.C. 20510

Dear Senator Mathias,

Thank you for your letter of Feb. 15. We at the Commission appreciate your continuing interest and support. Our success over the past few years in dealing with basin problems, particularly water supply, is due in no small part to your continuing efforts.

I am pleased to tell you that the two elements necessary to assure the WMA adequate water for both municipal and industrial supply and environmental maintenance are now in place. First, CO-OP, with the help of the local utilities, the Baltimore District COE, the USGS and the National Weather Service, has completed the development and implementation of techniques and procedures which increase the available supply by almost 50%. Second, the local utilities and their governing bodies have signed the agreements which bind them to operate collectively, and to share the costs of both Bloomington and Little Seneca Reservoirs.

The entire basin benefits. The construction of major upstream reservoirs is no longer necessary, saving hundreds of millions of dollars, and sparing upstream residents dislocation and environmental impacts.

The attached report addresses the seven questions in your letter.

On behalf of ICPRB I wish to thank you for your continuing interest in water related issues affecting the Potomac, and for the opportunity to assist you with these important hearings.

Sincerely,

Daniel P. Sheer

Daniel P. Sheer
Director

DPS:ss

Enclosures:

INTERSTATE COMMISSION ON THE POTOMAC RIVER BASIN

1055 First Street
Rockville, Md. 20850-1498
(301) 340-2661

Interstate Commission on the Potomac River Basin (ICPRB)
Section for Cooperative Water Supply Operations on the Potomac (CO-OP)

Daniel P. Sheer, Director
March 16, 1983

1) The purpose and organization of the CO-OP Section

CO-OP was formed by the ICPRB just after the Subcommittee on Governmental Efficiency and the District of Columbia hearings on Washington Metro water supply in 1979. CO-OP's function then was to develop the techniques and procedures necessary for coordinated operation of the area's water utilities. With the signing of the WMA water supply agreements in 1982, CO-OP became an operating agency, directly responsible for scheduling releases and withdrawals for the local utilities during droughts. The "Water Supply Coordination Agreement" is appended to this statement.

CO-OP has four classes of activities; routine drought forecasting and analysis, drought preparedness, including the annual drought rehearsal, research and development of improved operating techniques, and, of course, actual drought operations.

Routine forecasting operations are carried on cooperatively with the National Weather Service (NWS). CO-OP directs runs of the National Weather Service River Forecast System (NWSRFS), and then uses the results to ascertain the risk of not meeting all demands or not refilling all water supply storage during the year. When these risks become measurable, about 4%, drought operations begin.

Because droughts are few and far between, one of CO-OP's main functions is maintaining readiness to deal with droughts. This is accomplished through annual drought exercises, similar to military "war games". A hypothetical drought is constructed with historical meteorological data, and the utility staffs and CO-OP operate through that drought day by day, using the weather maps and forecasts associated with the year on which the drought was based. This makes possible extremely realistic simulation of actual operations.

CO-OP is engaged in research in a continual effort to upgrade operations. Staff works directly with the NWS to improve the NWSRFS. Work has begun on modifying daily utility operations to ensure minimum instantaneous flows in the Potomac (as opposed to minimum daily average flows). The latter involves helping the utilities schedule operation of finished water storage (water tanks, etc.) within the distribution system. Work in this area may have the additional benefit of allowing the utilities to reduce operating costs during non-drought periods by scheduling pumping to take advantage of off-peak power rates.

CO-OP's drought operations are fully described in the operations manual which is included in the "Water Supply Coordination Agreement". In short, CO-OP continually monitors the potential for drought, using the NWSRFS. When the potential for long term water shortages becomes significant (more than 4%, the limit of measurement), CO-OP begins its task of scheduling withdrawals from the Patuxent and Occoquan Reservoirs. Alternatively, if Potomac flows fall to less than twice expected water withdrawals, CO-OP also begins scheduling both upstream and downstream operations to ensure an adequate flowby for environmental protection and avoid potential short term water shortages in the WMA.

Withdrawals are scheduled using the NWSRFS for short-term (4-5 day) flow prediction. CO-OP requests the Baltimore District COE to meet a flow target at Luke, Md. The flow target is set to assure enough water will be available in the WMA five days later, and that, on the average, both the upstream and downstream reservoirs remain balanced in terms of available storage. The Baltimore District then determines the correct mix of Bloomington and Savage Reservoir water to meet that target and allocates the release between water supply and water quality storage. Downstream withdrawals are set to meet demands while maintaining adequate instream flow for habitat protection. (Figure 1)

The CO-OP Section is organized under the provisions of Article III of the ICPRB Compact. ICPRB Commissioners from Maryland, Virginaia, West Virginia, the District of Columbia, and the Federal Government also serve as CO-OP Commissioners. The Section is financially independent of ICPRB itself; all CO-OP activities are fully funded by the WMA water utilities (D.C. DES, WSSC, and FCWA). The technical activities of the Section are overseen by the CO-OP operations committee, which consists of the executive officers of the utilities.

2) The forecasting system and the measures which are or could be taken to reduce the impact of drought.

CO-OP has worked closely with the National Weather Service to modify the National Weather Service River Forecast System. NWSRFS represents the state-of-the art in both long and short-term river flow forecasting. The NWSRFS is based on a computer model which simulates the role of the soil and subsurface geology in converting rainfall to streamflow. (Figure 2) The model parameters have been calibrated so that when historical meteorological traces are run through the model, historical streamflows result.

The National Weather Service Mid-Atlantic River Forecast Center in Harrisburg runs the previous 24 hours precipitation through the model every morning. In this way the model estimates the current condition of the soil (dry or wet). Even though long-range weather forecasts tend not to be as accurate as one hopes for, knowing the soil moisture conditions at the beginning of the summer allows CO-OP to make very good estimates of the streamflow at the end of summer. This is because the vegetation in the basin consumes more water during the summer than falls as rain (on the average). This means that the groundwater drains to the stream throughout the summer, and the amount of groundwater stored at the beginning of the summer is a very good indication of what groundwater conditions, and thus base streamflow will be at the end of the summer.

Thus, the NWSRFS allows CO-OP to accurately assess the potential for drought related problems at an early stage. When such potential exists, CO-OP's drought operations commence. Initial actions center on preserving the storage in both upstream and local reservoirs. Because of the early warning, minor changes in operations are easily capable of saving large quantities of water in the long run. In fact, scheduling operations in such a manner is more than sufficient to deal with any drought in the historical record of almost 100 years duration.

NWSRFS also allows CO-OP to assess the potential for a drought substantially worse than the worst in the record. In the extraordinarily unlikely event that such potential exists, the utilities, as part of their coordinated operating agreement, will request the local governments to institute water use restrictions. The WMCOG has thoroughly investigated the potential for such restrictions, and has issued a water shortage emergency plan to deal with even this unlikely event. Should the drought be so severe that even the water shortage emergency plan is inadequate, the WMA Low Flow Allocation Agreement provides a basis for equitably allocating water shortages.

In sum, the WMA could deal with a recurrence of the drought-of-record without significant impact on the availability of water for municipal and industrial use. Moreover, the mechanisms for minimizing the impacts of droughts substantially more severe are already in place.

3. Likely effects of severe drought in the Potomac Basin?

While the WMA is in a good position to deal with drought, such is not the case throughout the Potomac Basin. Severe drought will result in widespread crop failures, and extreme economic difficulty for farmers. Individual wells will run dry, and public supplies for small municipalities throughout the basin will be desperately short of water.

Widespread irrigation to deal with agricultural drought seems economically unattractive. Crop insurance is available throughout much of the basin, but is little used; each farmer evaluates his own relative costs and potential benefits.

Individual wells are the responsibility of the homeowner. There are no standards requiring developers to ensure that wells will supply adequate water during droughts.

Likewise there are no standards which require minimum levels of finished water for municipal supplies, or even detailed plans for dealing with potential droughts. As the experience in the WMA clearly shows, drought impacts can be greatly reduced by anticipating potential droughts and modifying operations and/or demand accordingly.

4. How would the system function in a drought emergency and what has been learned from the 1982 drought exercise?

Last October, the local utilities, the Baltimore District COE, and CO-OP participated in the second annual drought exercise. Using historical rainfall from 1966, and starting with soil moisture conditions substantially worse than experienced in 1966, CO-OP created a hypothetical drought substantially more severe than the worst in the record for use during the exercise.

Operations were simulated for the period from mid-August to mid-September. The simulation began, and for about a week thereafter, no releases from upstream were required. CO-OP staff estimated the WAD demand, and then set a target withdrawal for the WAD at Little Falls to maintain 300 mgd in the river between Great Falls and Little Falls. Unfortunately, (or fortunately, since no real costs were incurred and we learned from the experience) lack of foresight caused a one day pumping requirement at Little Falls to add unnecessarily to the peak power charge for the month. WAD withdrew water in excess of its Little Falls target from the Great Falls intake. Target withdrawals for the WSSC and FCWA Potomac plants were set to minimize withdrawals from the Occoquan and Patuxent reservoirs, respectively, while maintaining instream flow.

As the drought wore on, upstream releases were targeted to meet flowby plus an additional 80 mgd. This margin of safety is critical to proper operation until Little Seneca Reservoir is completed. It also allows reduced pumping costs for the WAD at Little Falls. The extraordinary severity of the simulated drought was expected to require that the managers of the local utilities meet to discuss potential joint action, over and above normal operations. Normal operations were so successful in dealing with even this extreme event that no such meeting was needed over the one month exercise.

Storages in all reservoirs remained at adequate levels throughout the exercise, further demonstrating the adequacy of the WMA water supply systems. The relative abundance of water for water supply during the exercise led to agreement among the utilities that requests from the COE for use of surplus water supply storage from Bloomington for environmental enhancement and other purposes should be entertained. The COE did in fact evaluate whether or not to make such a request in late 1982 to maintain high flows in the North Branch. This kind of cooperation between the COE and the utilities can only lead to better management for all purposes.

5. Potentials for and potential consequences of spills of hazardous materials in the Potomac including procedures for handling a spill emergency involving dangerous materials dumped into the Potomac?

The potential for hazardous spills in the Potomac Basin has never been quantified, but certainly exists. In June of 1981, a truck carrying the toxic chemical analine lost part of its load on Interstate 70 near the Potomac, and initial reports indicated a substantial amount had contaminated the River. Fortunately, little had reached the Potomac, and because analine is volatile, what did quickly evaporated.

In the initial frenzy following the spill, ICPRB attempted to estimate the time of arrival of the spill at all water supply intakes downstream, and the potential duration of toxic concentrations. We found that the information required to produce these critical answers was simply not available. ICPRB contacted the Maryland Branch of the USGS to determine what was needed to rectify the problem.

The USGS and the Maryland Geological Survey designed the necesary studies on the main stem, and made available matching funds to carry them out. ICPRB arranged contributions from the states and utilities, and volunteered to develop computer programs, based on the results, which would provide the required information quickly and easily if and when another spill occurred. ICPRB also arranged a parallel study on the South Branch in West Virginia, using its own funds and matching monies from the West Virginia Branch of the USGS.

The field work for both studies is complete. The weather cooperated fully in both cases, and the data collected is of excellent quality. The USGS report on the main stem is now in peer review and will be available soon, as will the report on the South Branch.

The Shenandoah is the only major tributary on which the requisite data is not yet available ICPRB is seeking funding for that work. Although the work is quite important, the general budgetary crunch has made finding that funding very difficult. USGS matching funding may be available if the project is carried out this year; 25 to 30 thousand in local funds must be arranged. The work will primarily benefit the communities, farms and industries which rely on the Shenandoah.

Examination of the data collected underlines the importance of the work. It appears that a spill of a single truckload of a soluble toxic substance in the area above Hancock could easily cause a violation of toxicity standards for drinking water in the WMA for period a week or longer, at average summer flows. It would take between one and two weeks for the spill to arrive in the WMA, so that emergency preparations in advance are possible. Possible measures include large releases from Bloomington to flush the spill past water supply intakes, diverting water from tributaries directly to water treatment plants, and drastic measures to reduce demand as outlined in the COG Water Shortage

Emergency Plan. The information produced by the USGS studies, now in peer review, will allow preplanning of actions necessary to avert water supply disaster. ICPRB and CO-OP will take the lead in developing alternatives for dealing with spills throughout the basin.

6. What other contingencies is CO-OP prepared to handle and how is it set up to respond to them?

As part of ICPRB's work for the Balt. Dist COE WMAWSS, distribution system models were developed for all the area utilities. Partly as a result, all the area utilities now use the same simulation program. CO-OP is pursuing a joint program with the utilities to use these simulations to save money through improved distribution system operations. The simulations also make it possible to improve reaction to emergencies such as fire or contamination affecting the distribution systems.

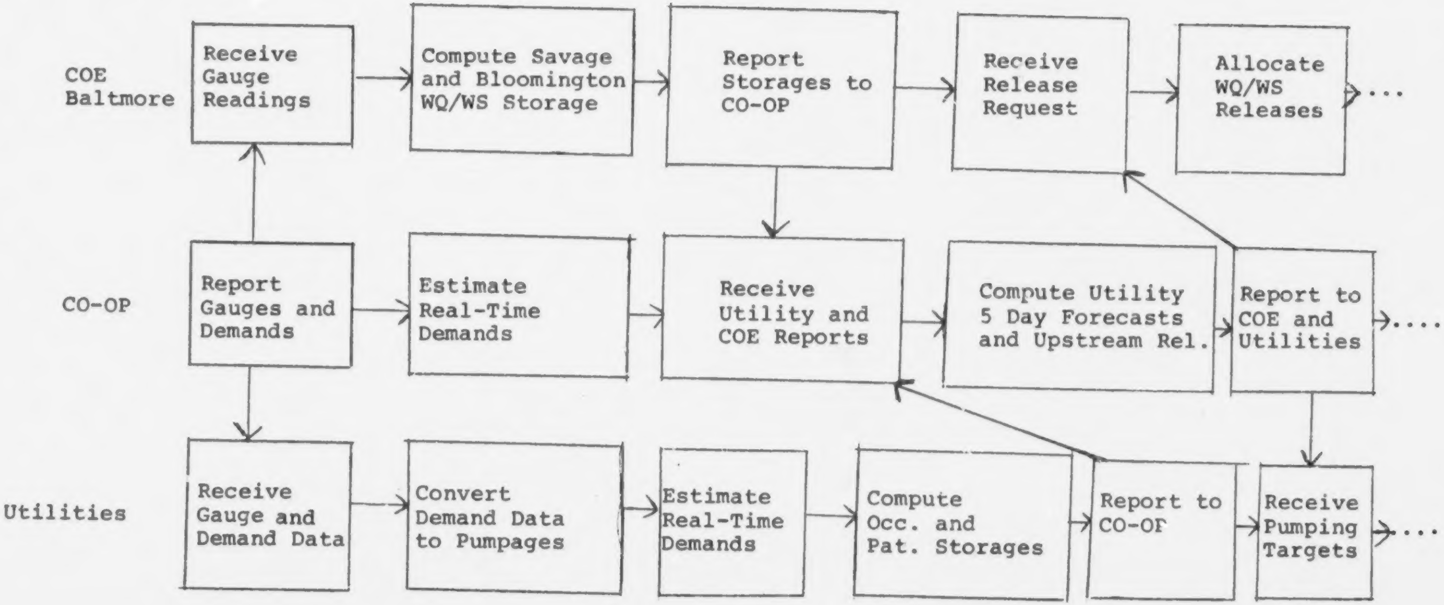
7. What actions or legislation are necessary to implement these water supply and spill control changes?

For the most part the above programs can be carried out under existing legislation, particularly in the WMA. It is desirable, however, for water supplies in other portions of the basin to be prepared to deal with drought emergencies and spills, and to improve their operations. Currently, there is little incentive for suppliers to do such planning or even to estimate the reliability of their current supply in light of growing system demands until an emergency arises. A program to create those incentives is sorely needed.

We are pleased to attach a history of the resolution of the WMA water supply problem which has been described as follows:

> "This achievement is unique in that it guarantees an adequate water supply for one of the country's major metropolitan areas over at least the next 50 years--but does not involve the construction of any major physical facilities. It is an achievement of engineering management, engineering systems analysis, diplomacy and confidence by elected officials in demonstrated engineering capabilities."

CO-OP Drought Operations Flow Chart


COE Baltmore
Receive Gauge Readings
Compute Savage and Bloomington WQ/WS Storage
Report Storages to CO-OP
Receive Release Request
Allocate WQ/WS Releases
...
CO-OP
Report Gauges and Demands
Estimate Real-Time Demands
Receive Utility and COE Reports
Compute Utility 5 Day Forecasts and Upstream Rel.
Report to COE and Utilities
....
Utilities
Receive Gauge and Demand Data
Convert Demand Data to Pumpages
Estimate Real-Time Demands
Compute Occ. and Pat. Storages
Report to CO-OP
Receive Pumping Targets
...

EXECUTIVE SUMMARY

ASSURED WATER SUPPLY FOR THE WASHINGTON METROPOLITAN AREA

Daniel P. Sheer
Interstate Commission on the Potomac River Basin
Rockville, Maryland

In 1982, the Washington Metropolitan Area took an important step that will guarantee adequate water supply well into the 21st century. Yet, no large reservoirs were built, no new wells drilled, no large pipelines constructed. State-of-the-art water resources management techniques substantially increase the yield of the existing supplies, meet future water demands, and improve the aquatic environment. Agreement among the local jurisdictions implemented the innovative operating procedures.

Implementation required eight separate agreements among agencies including the federal government, the states of Maryland and Virginia, the District of Columbia, two local utilities, and the Interstate Commission on the Potomac River Basin. These were signed on July 22, 1982, climaxing three decades of uncertainty about the water supply of the Washington Metropolitan Area. During that period, population of the region doubled under the cloud of dire warnings of the need for a reliable water supply source. Severe droughts of the mid-1960s came and went. Proposed solutions included as many as sixteen major reservoirs, recycling of estuarine water containing a substantial proportion of treated wastewater, well fields, high flow skimming, and assorted other facilities. By 1977, after 25 years of study, the problem was nowhere near solution.

The Washington Metropolitan Area relies largely on the Potomac River for water supply. But the Potomac is virtually unregulated; its flow varies from extreme flood--over 200 billion gallons per day--to extreme drought: less than 400 million gallons per day at Washington. In the years since the record low flow of September 1966, the area's combined Potomac withdrawals have often exceeded 400 million gallons per day. The operating procedures implemented in July 1982 provide a dependable supply for Washington of about 950 million gallons per day.

Coordinated regional operation of water supply facilities is the key to this solution. Operation of local reservoirs are meshed with those at Bloomington Dam, completed in 1981 by the U.S. Army Corps of Engineers and the recipient of the American Society of Civil Engineers 1981 Award of Merit.

But, Bloomington is only one of the many upstream reservoirs considered necessary in the 1960s and 1970s to solve the problem. Faced with politically savvy opponents, plans for other new and costly dams in the beautiful and historic Potomac Valley were thwarted. The situation called for a largely non-structural solution.

Developing an implementable solution to the Washington Metropolitan water supply problem required a unique combination of organizations and expertise. Beginning in the late 1970s, local elected officials, utilities, university researchers, and federal, state, and interstate agencies all worked in close cooperation toward a single goal. An important factor for public officials is the cost saving involved: the non-structural solution costs from $200 million to $1 billion less than the cost of implementing any previously proposed structural solutions.

Improved yield is achieved by several methods. Daily demand and flow forecasting techniques are used to schedule releases from Bloomington Reservoir, over 200 miles and 5 days travel time upstream. Flexibility inherent in the local distribution systems is used to save water in existing local reservoirs on small tributaries. During droughts, Potomac withdrawals of all utilities are coordinated on a daily basis to minimize the water flowing by the intakes over and above instream flow requirements. A new small local reservoir ($30 million) is being built to improve operational flexibility by providing a means to correct for forecasting errors. In sum, the operating techniques squeeze the most out of the existing water supply infrastructure.

The political nature of the problem posed additional engineering challenges. Not only was it necessary to develop new solutions, techniques had to be developed to demonstrate beyond question the feasibility of coordinated regional operations, and the impact they would have on each utility and the environment. This was accomplished using simulation and gaming techniques. Simulation of the benefits to each utility of regional operation were used as a basis for cost sharing in Bloomington and Little Seneca Reservoirs. Instream habitat simulations were used to help define operating rules which improved fisheries potential, while meeting water demands.

Prior to the signing of the agreements, the water supply officials of the region participated in two drought exercises (the water equivalent of war games). These served not only to test and improve the operating procedures and the provisions of the agreements, but also to familiarize the officials with the use of advanced engineering techniques in day-to-day drought management.

Mathematical models, optimization and simulation techniques, and other innovative tools of systems analysis have been used at the university level for many years. Their successful application in the Washington Metropolitan Area demonstrate their value in dealing with complex engineering and politicial problems. Overall system yield has been increased by nearly 50%, and individual project yields by as much as 200%, without infringing on the autonomy of local goverments.

Engineering achievements included:

* The combination of optimization and simulation techniques to provide practical rules for operation of the entire system.

* The first large scale implementation of the National Weather Service River Forecast System (NWSRFS), based on a soil moisture accounting model and its direct integration with reservoir operations.

* The development and implementation of a technique to produce probabilistic water demand traces, and the application of that technique in water resource system design and operation.

* The combination of distribution analysis and hydrologic modeling to develop operating procedures for a complex water distribution system--one that includes many independent water suppliers.

* The use of risk analysis to identify the start of potential droughts and to quantify the risks of continued drought.

* The use of drought games to test and improve water supply operating procedures and to illustrate the use of those procedures to decision makers.

* Substitution of a small local reservoir for much more costly upstream impoundments.

The joint operating scheme is designed to minimize interference with normal utility operation. Joint operations do not begin until drought conditions, which are defined using risk analysis, exist.

When required, releases from the Bloomington Dam, 200 river miles--and several days--upstream from Washington, are scheduled using demand and flow forecasting techniques. The release is set to assure a very low probability of shortage, given the uncertainty in the forecasts and the availability of local supply downstream.

Downstream operations strive to maintain balanced storage in the metropolitan area reservoirs on a daily basis. Modest daily corrections balance the system. Weather information, upstream flow conditions, and other factors are fed through a central computer system to aid in allocating the flow of the Potomac River and reservoirs.

Writing the contracts to implement the joint operations and cost sharing was a formidable task. The interstate nature of the agreements, the unique character of the government of the District of Columbia, and the congressionally-mandated responsibilities of the U.S. Army Corps of Engineers created a complex situation. But as a result of the drought exercises and careful education of utility managers, the negotiators were absolutely convinced of the feasibility and desirability of joint operations.

Eight separate but interlocking contracts were executed on July 22, 1982. The basic agreement focuses on operating rules. Other agreements concern cost sharing and the modification of pre-existing agreements and contracts.

Providing the Washington area with an adequate water supply was a complex engineering, social, economic, environmental, and institutional problem. Large scale structural solutions had been proposed and found wanting. A fresh approach was required. It was provided by advances in water resources engineering analysis over the last 20 years.

The techniques of water resources engineering systems analysis--linear programming, synthetic hydrology, statistical analysis, hydrologic modeling, and computer simulation--were adapted to produce a predominantly non-structural engineering solution to the problem. Many of the techniques were used together for the first time, and others were subject to major modification specifically to address this problem.

An "insoluble" problem of almost 30 years standing was resolved. The "impossible" task of achieving regional cooperation was accomplished. Between $200 million and $1 billion were saved compared to previously evaluated alternatives. Moreover, the solution was not achieved at great environmental expense. In fact, the environmental benefits of increased minimum instream flow and the recreational opportunities provided by Little Seneca Lake may outweigh any environmental impacts.

Significantly, the integration of engineering analysis and the decision making process, made possible by computer simulation, played an essential role in implementing the solution. Without the convenient and credible framework for decision making provided by the model, negotiations between the parties would have been far more difficult.

Perhaps the most important aspect of the solution to the WMA water supply problem is the example it sets. Here is proof that non-structural engineering alternatives, including better management of existing facilities, can solve some of the most difficult socio-political problems and achieve substantial cost savings. Because the replacement value of our existing facilities is substantially greater than the present value of expenditures on new facilities at current rates, the potential benefits of widespread application of the types of engineering analysis used in the Washington area are enormous.

ASSURED WATER SUPPLY FOR THE WASHINGTON METROPOLITAN AREA

Daniel P. Sheer
Interstate Commission on the Potomac River Basin
Rockville, Maryland

On July 22, 1982, the federal government, the states of Maryland and Virginia, the District of Columbia, two local utilities, and an interstate agency executed eight separate agreements, assuring the Washington Metropolitan Area (WMA) an adequate supply of water well into the next century. The agreements ended a nearly thirty year search for solutions. The proposed solutions included as many as sixteen major reservoirs, recycling of estuarine water containing a substantial proportion of treated wastewater, well fields, high flow skimming, and assorted other facilities, in multiple combinations.

In 1977 the U.S. Army Corps of Engineers, in the Northeastern United States Water Supply Study, evaluated nine alternatives, each costing between $200 million and over $1 billion in today's construction dollars. All proved infeasible for a variety of political, social, environmental, and economic reasons. In that same year, after ten years of negotiations, and with no implementable options for additional supply, the Corps (which suppies water for Washington, D.C. and some Virginia suburbs), the affected states, and the local water utilities agreed on a formula for allocating water during shortages (Potomac River Low Flow Allocation Agreement). Even this agreement was opposed by the U.S. Fish and Wildlife Service as providing inadequate instream flow for aquatic life.

In contrast, the agreements reached in July, 1982 are based primarily on almost costless, improved, cooperative operations of existing facilities, using state-of-the-art flow and daily demand forecasting techniques. Construction of one small local reservoir ($30 million) is included, but even that reservoir is important not so much for the quantity of water it stores, but for the additional operational flexibility it provides. Overall system yield has been increased by nearly 50%, and individual project yields by as much as 200%. Improved operations not only meet water supply needs for decades to come, they also provide substantial instream flow and water quality improvements. Innovative engineering provided a superior, non-structural solution to this difficult problem.

This success story is indicative of the "coming of age" of the application of systems analysis techniques in the field of water resources engineering. Engineering achievements include:

* The combination of optimization and simulation techniques to provide practical rules for operation of the entire system.

* The first large scale implementation of the National Weather Service River Forecast System (NWSRFS), based on a soil moisture accounting model and its direct integration with reservoir operations.

* The development and implementation of a technique to produce probabilistic water demand traces, and the application of that technique in water resource system design and operation.

* The combination of distribution analysis and hydrologic modeling to develop operating procedures for a complex water distribution system—one that includes many independent water suppliers.

* The use of risk analysis to identify the start of potential droughts and to quantify the risks of continued drought.

* The use of drought games to test and improve water supply operating procedures and to illustrate the use of those procedures to decision makers.

* Substitution of a small local reservoir for much more costly upstream impoundments.

The agreements were made possible by the extraordinary integration of engineering analysis and the political decision making process. Here again, the use of systems analysis in the appropriate institutional framework made it possible to build consensus among a diverse and independent group of decision makers working to solve the complex problem. The institutional arrangements used to facilitate this integration may well serve as models for future efforts in water resources systems design.

A Fickle River

The Washington Metropolitan Area and the Nation's Capital sit astride the Potomac at its transition from free-flowing river to tidal estuary. Three million people, 75% of the population of the entire Potomac basin, live in the Washington region. Three suppliers provide nearly all of the water supply needs of the Washington area. The Washington Suburban Sanitary Commission (WSSC) provides water for suburban Maryland, and the Fairfax County Water Authority (FCWA) provides water for most of Fairfax and northeastern Prince William counties in Virginia. The Washington Aqueduct Division U.S. Army Corps of Engineers, (WAD), wholesales finished water to the District of Columbia and the County of Arlington and City of Falls Church in Virginia. (Figures 1,2)

The area has three primary sources of raw water. Until 1982, when a new 200 mgd intake and 50 mgd treatment plant on the Potomac were completed, the FCWA met nearly its entire demand from the Occoquan

Reservoir at the mouth of the Occoquan River. The reservoir has about 11 billion gallons of useable storage and a "safe yield" of 55 mgd. feeds two treatment plants with a combined peak capacity of 112 mgd.

The WSSC takes most of its supply from the Potomac through a 400 mgd intake and 240 mgd (peak) treatment plant located just downstream of the new FCWA intake. In addition, the WSSC has two reservoirs on the Patuxent, with a combined useful storage of about 10 billion gallons. The Patuxent reservoirs have a combined "safe yield" of 45 mgd, 10 mgd of which is committed to maintaining flow below the lower dam. The peak capacity of the Patuxent treatment plant is 65 mgd. The WAD is entirely dependent on the Potomac for supply. It has two intakes, a 200 mgd gravity intake at Great Falls, and a 400 mgd pumping station at Little Falls just above the District line. The WAD intakes are the farthest downstream of the three major suppliers. (Table 1)

The Potomac at Washington drains over 11,000 sq. mi. with an average flow of about 6 billion gallons per day. It is a notoriously fickle river, with daily flows that range over almost three orders of magnitude from floods of 200 billion gallons per day to drought flows of less than 400 mgd. The drainage is almost entirely uncontrolled. The only sizable dams in the basin are at Savage River and Bloomington, both in the headwaters of the North Branch in Western Maryland and West Virginia, over 200 miles upstream of Washington.

Savage Reservoir, in western Maryland, began as a WPA project in the 1930s and completed by the Corps in the early 1950s. It controls about 130 sq. mi. and can store about 12 billion gallons for flood control or water quality flow maintenance purposes. It has been used to provide a dependable flow of 60 mgd in the North Branch at Luke, Maryland, as well as supply for the small town of Westernport, just downstream. Savage Reservoir was in operation on September 13, 1966, when the minimum one-day flow of 388 mgd was recorded at the Little Falls gauging station. Since that record low flow, the dependable yield of the Potomac for water supply, including contributions from Savage, has commonly been taken as 388 mgd.

Bloomington Dam, on the North Branch Potomac which forms the boundary between Maryland and West Virginia, controls some 210 sq. mi. of drainage just over the ridge from Savage. It provides flood control and recreation in addition to conservation storage. It is the third highest dam east of the Mississippi, yet it impounds only 31 billion gallons of water because of the steep gradient of the stream. Of the conservation storage, 55% is allocated for water quality control in the North Branch. The remaining 45% has been purchased by the WMA utilities for use in water supply, as part of the agreements mentioned above. The "safe yield" of Bloomington is 135 mgd. (Figure 3)

Wastewater collected from the customers of all three suppliers is discharged to the tidal Potomac below Little Falls, and is not available for reuse. Therefore the water available is simply the sum of the available supplies. (Table 2)

Summing the safe yield of Bloomington and the Potomac River gives 523 mgd as the dependable Potomac flow. From this must be taken the required minimum Potomac instream flow, 100 mgd. This leaves 423 mgd of Potomac flow for water supply. Adding the safe yields of the local reservoirs gives the dependable yield for WMA water supply from all sources, 513 mgd.

By 1977, average demands for the summer months were often in the range of 450 to 470 mgd. Peak day demands had well exceeded the sum of the safe yields, even counting water from Bloomington, which was four years from completion. Withdrawals from the Potomac had surpassed the 423 mgd dependable flow. The Corps' North East Water Supply (NEWS) Study was predicting the possibility of regional shortages as large as 80 mgd by 1980, and 365 mgd (almost 35%) by the turn of the century. The FCWA, as yet without a Potomac intake, nearly emptied its Occoquan Reservoir that year, and Fairfax County nearly closed schools and businesses in a desperate attempt to save water.

A Century-Old Problem

The critical problems of the late 1970s had been building for a long time. In 1857, when Congress first directed the Corps to develop a dependable supply for the Nation's Capital, the Potomac was looked on as an inexhaustable source. This perception continued through World War II, despite severe droughts, particularly in the early 1930s. But by 1955, demands had grown to the point that a modest drought inspired the Congress to direct the Corps to prepare a long range water resources development plan for the Potomac basin, including the Washington area. Responding to the Congressional request, the Baltimore District Corps of Engineers in 1963 published a full development basin plan as comprehensive, thorough, and well documented as any developed before or since. The plan, called for the construction of sixteen major reservoirs and over 400 smaller impoundments for water supply, flood control, recreation, and water quality improvement. Most of the water storage was, in fact, for water quality flow maintenance. The plan found little support.

In most cases, the proposed reservoirs would have flooded a significant percentage of the productive land in the rural, mountainous western counties of the basin. Upper basin residents perceived the primary benefits to be downstream, -- water for municipal water supply and wastewater dilution. A major controversy ensued, and the District Engineer's recommendations were never submitted to Congress. A separate less-controversial report of the North Branch had been prepared, prior to the release of the 1963 plan.

This was considered by Congress and led to the authorization of the Bloomington Lake in 1962.

The northeast drought of the mid-60s also affected the Potomac. When Congress authorized the NEWS Study in 1965, the Corps began its second major study of the Washington area problem. In 1966, the "bottom" fell out of the river. Based on the drought of the 1930s, 500 mgd was considered an absolute minimum flow for the river at Little Falls. That mark was broken on September 11, and the flows kept dropping for another week, to 388 mgd. In this particular case, the arrival of a hurricane averted impending disaster.

The design of the WSSC's Potomac intake was inadequate to handle the reduced river flow, and after the drought, the WSSC applied for a permit to build a weir to alleviate the problem. Unfortunately for the WSSC, water supply for the U.S. Congress came from the Corps intakes downstream. The WSSC was not issued a permit, and thus began the negotiations which led to the Low Flow Allocation Agreement in 1977.

In 1969, the State of Maryland took a major positive step in the direction of providing more water; it set up the Maryland Potomac Water Authority (MPWA). The authority guaranteed to purchase just enough of the water supply to be stored in Bloomington to meet the requirements for securing a federal appropriation. Funds were forthcoming, and construction at Bloomington started in 1971.

Meanwhile, the Chief of Engineers revised the recommendations in the 1963 Baltimore District Engineer's report, including only six reservoirs. The Secretary of the Army reevaluated the Chief's report in light of an increase in the interest rate charged for water resources projects. The Secretary recommended the construction of only two of the reservoirs: Verona, on the Shenandoah River near Staunton, Virginia, and Sixes Bridge, on the Monocacy River at the Maryland, Pennsylvania border. The report finally went to Congress.

By the time the recommendation was considered by Congress, the use of water to dilute waste in the tidal river was discouraged by the passage of the Federal Water Pollution Control Act Amendments of 1972. Advanced waste treatment was being proposed for all wastewater treatment plants in the Washington area. Eliminating the need for dilution had the effect of reducing the required minimum flow at Little Falls by about two-thirds. The Congress directed the Corps to reformulate the Verona and Sixes Bridge projects as soon as possible. The task fell to the NEWS staff.

Their report, completed in early 1973, evaluated many new concepts for increasng supply, including high flow skimming using the Patuxent and Occoquan Reservoirs, reuse of water from the tidal river, pumping from the Rappahannock and Susquehanna Rivers, and restricting water use during emergencies. The Corps again recommended the immediate construction of Verona and Sixes Bridge reservoirs. In addition, the Corps recommended the construction of an Experimental Estuary Treatment Plant to test the feasibility of recycling water from the tidal river. Despite the enormous construction cost estimates for recycling ($1.4 billion in 1982, in addition to the cost of the two reservoirs), the Corps felt that recycling was a promising alternative. This was no doubt due to the difficulty in securing authorization for any additional upstream reservoirs. (Table 3)

Congress authorized and funded the experimental estuary treatment plant and preliminary design of the two reservoirs. But, it conditioned any further appropriations on: a) the completion of tests of the estuary treatment plant, b) the completion of a third major study of the problem by the Corps (the Washington Metropolitan Area Water Supply Study, WMAWSS), and, in an unusual action, c) the review of both of the above by the National Academies of Science and Engineering.

By this time the WSSC had been trying for seven years to secure a permit for its weir. In 1974, the Corps and the WSSC agreed on a first draft of the Low Flow Allocation Agreement designed to ensure the WAD an equitable share of the available flow during drought. The Corps concluded it needed Congressional authorization before signing the document. Virginia and the FCWA, by then contemplating using Potomac water, demanded to be parties to the agreement. When Congress consented to the Low Flow Allocation Agreement in 1976, it stipulated that two conditions be met before the Corps could issue a permit for the WSSC weir. First, the agreement had to be signed; and second, the weir could not conflict with the Corps recommendations under its new Washington area study.

Pioneering Efforts

In 1976, frustrated by the failure to find implementable regional solutions for the area's problem, the WSSC undertook a study to determine what it could do to ensure its own supply (the Bi-County Water Supply Study, BCWSS). The organizational structure of the study was unique, and effective. The study was directed by the Bi-County Water Supply Task Force, organized by the WSSC and composed of the local elected officials of Prince George's and Montgomery counties who would be required to approve the recommendations. In this way, the appropriate officials were directly exposed to the engineering design process, and given an understanding of and a stake in its results. Two advisory committees were also formed, a Citizen Advisory Committee and a Technical Advisory Committee.

The citizen members were appointed by the county executives, the technical members by the WSSC, which funded the study. Both advisory committees met regularly with the study consultants, and made recommendations directly to the task force. As a result of this organizational arrangement, the consultants became acutely aware of most of the concerns and objectives of the informed public. The consultant could thus concentrate on the alternatives most likely to be implementable. In addition, the engineering rationale behind the recommendations were well understood and appreciated by a diverse and influential group of community representatives.

In 1976, the FCWA applied to the Corps for a permit to construct its Potomac intake. The Corps began preparing an Environmental Impact Statement (EIS) while negotiating the Low Flow Allocation Agreement. The Office of the Chief of Engineers had serious reservations concerning the 1974 draft agreement. At the insistence of the Corps, a provision allowing any party to the agreement to "freeze" the allocation formula in 1988 was added. Since the suburbs were expected to grow faster than the city, this provision had the effect of ensuring the WAD of a minimum share of Potomac flow, regardless of suburban growth. The provision was onerous to the WSSC and FCWA, however.

In 1977 a modest drought hit the Potomac basin; it was substantially more severe in the Occoquan sub-basin in Virginia. The drought really demonstrated the seriousness of the problem. As stated earlier, the Occoquan fell to alarmingly low levels, and Fairfax County seriously considered closing schools and businesses. As flows in the Potomac fell to their lowest levels in 10 years, the WSSC's ability to meet its demands, without its weir, were seriously threatened. The Corps granted the WSSC permission to construct a temporary, emergency weir. Rock filled gabions were airlifted into place with military precision, forming a 1500-foot-long weir. (Figure 4)

The Low Flow Allocation Agreement was signed in January 1978. It included the "1988 freeze" provision, despite the objections of Maryland, Virginia, the WSSC, and the FCWA. Both Maryland and Virginia utilities needed permits to start construction, and their only alternative was to pursue the matter to a distant and uncertain end through federal courts.

The Fish and Wildlife Service of the U.S. Department of the Interior, not consulted during negotiations, objected strongly. Fish and Wildlife insisted that the 100 mgd minimum instream flow agreed to by the Low Flow Allocation Agreement signatories was inadequate, and suggested flows as high as 1500 mgd as more reasonable to protect fisheries. Maintaining such flows would have denied the suppliers use of any Potomac water for extended periods during most summers. In a memorandum of understanding, the Maryland Department of Natural Resources agreed to undertake a study (the "Low Flow Study") to determine minimum flows, and the Corps agreed to abide by the recommendations of that study.

In August 1978, with the Environmental Impact Statement completed, the Corps granted the FCWA permit. Construction started soon after. The WSSC was still out of luck, however; the Congress had insisted that the permit be in accord with the Corps' Washington Water Supply Study, and the study was not scheduled for completion until 1983.

In 1978 the Maryland's Bi-County Task Force produced three primary conclusions. First, the WSSC should not plan to construct all the facilities necessary to meet peak demands during the worst of droughts; small shortages of seven or fewer days duration were acceptable. Second, the WSSC could provide for its own needs for 15 to 20 years by building either of two facilities, a small reservoir on Little Seneca Creek in Montgomery County, or a large raw water pipeline between the WSSC Potomac and Patuxent Treatment Plants. Third, the WSSC and the Maryland counties should proceed immediately with the planning and design of both facilities, and the construction of one, preferably Little Seneca Lake.

Not surprisingly, given the structure of the Bi-County Study, the recommendations were very well received locally. The WSSC received the approval of both counties, began design of Little Seneca, and applied to the Corps for the necessary permit. The U.S. Environmental Protection Agency which routinely reviews proposed Corps permits, strenuously objected to the Little Seneca permit. The objections centered on potential water quality problems in the lake, alteration of natural habitat, and the possibility that an independent solution to the WSSC's problem would foster environmentally disruptive independent solutions to the problems faced by the other utilities.

The WSSC continued to seek a permit to build its weir. A rider removing the congressional stipulation that the Washington Area Study be complete before the permit was granted was attached to a bill naming a monument in New Mexico for the late Senator Montoya of that state. President Carter signed that bill in June 1981. Construction started immediately. (Figure 5)

Attacking the Regional Problem

The Washington area water supply problem was obviously a complex engineering, social and political problem. While there was no shortage of standard technical or even non-standard solutions, none of the solutions considered to the overall problem before 1977 had been socially or politically feasible. Yet, by 1977, all the elements of an acceptable solution were present.

The organization of the Maryland Potomac Water Authority (which guaranteed repayment of initial water supply costs of Bloomington Lake), and the signing of the Low Flow Allocation Agreement both demonstrated that regional cooperation, though difficult, was possible. The Metropolitan Washington Council of Governments (COG) had developed a regionally acceptable method of forecasting population growth with the support of all the local jurisdictions. These forecasts were to provide a credible basis for forecasting water requirements. COG also was in the process of developing a regionally acceptable plan for implementing its Water Shortage Emergency Plan, to be used when it became necessary to implement the Low Flow Allocation Agreement.

The WMA had also moved to voluntarily reduce its water requirements. Both the WSSC and FCWA adopted progressive pricing policies to encourage water conservation and discourage excessive peak use of water. Building codes in the Washington area suburbs had been revised to require the installation of water saving devices in new construction. Limits placed on wastewater treatment plants stressed flow reduction to meet requirements.

In the late spring of 1977, the Interstate Commission on the Potomac River Basin (ICPRB), then working with the COG on water quality management, first realized that altering operations of existing water supply facilities had not been adequately considered in previous regional water supply planning efforts. In particular, ICPRB performed an analysis which completely abandoned the concept of "safe yield" operation of the Patuxent and Occoquan Reservoirs, concentrating instead on the maximum yield which could be derived if those reservoirs were operated in concert with the free-flowing Potomac.

Safe yield of a reservoir is generally defined as the constant rate of withdrawal which will just empty the reservoir given a repeat of the worst drought in the historical record. During the drawdown, withdrawals exceed inflows, and the minimum storage (0) occurs just as inflows begin to exceed withdrawals.

The analysis continued and total water requirements in the year 2000 were projected at 750 mgd. The 90 day long, 50 year recurrence interval low flow in the Potomac (90-Q-50) was 580 mgd. This 90 day duration flow produced the worst deficit. The total deficit over the 90 day period would be:

$$\begin{array}{rl} & 750 \text{ mgd} \times 90 \text{ days} = 67.5 \text{ billion gallons} \\ - & \underline{580 \text{ mgd} \times 90 \text{ days} = 52.5 \text{ billion gallons}} \\ & \text{Deficit} = 15 \text{ billion gallons} \end{array}$$

But, the storage in the Occoquan and Patuxent reservoirs alone totaled almost 20 billion gallons. Conclusion: the WMA was not short of water if it could only efficiently use the already available local storage.

This is a classic illustration of a principle of operations research - the fewer constraints on the solution, the better its performance. Safe yield operation of the local reservoirs was a tremendously restrictive constraint. It had been assumed in all previous studies.

Systems analysis need not always employ the most sophisticated techniques to be effective; the simplicity of the above analysis was a decided advantage. With the help of the COG the idea received wide publicity, and had a rapid impact on local decision makers. Large, two way transmission lines (raw water interconnections) were immediately proposed to implement the idea, providing the ability to move reservoir water to the Potomac treatment plants as needed and Potomac water to the reservoirs, as available. The Federal, Interstate, State, Regional Advisory Committee (FISRCA) to the Corps WMAWSS urged the Corps to investigate the potential of such interconnections. (Figures 6,7)

The Search for Flexibility

The Corps moved with dispatch. It funded two interconnection studies, the first dealing with cost, sizing, and operation of raw water interconnections. The second was to investigate the potential for improving yield by improving the existing distribution systems and perhaps expanding the treatment plants for the Potomac and the local reservoirs. These were called finished water interconnections.

The concept behind the finished water interconnection study was as follows: When Potomac water was available, the use of the reservoir treatment plants would be reduced to well below their "safe yield"; the water thus saved would then be available to support use of the reservoirs at well above the safe yield level when the Potomac flow was low. Modest treatment plant expansion might be required to meet peak demands when either the Potomac was low, or use of the reservoirs was being minimized, and new distribution lines would be constructed to allow such operations while maintaining adequate pressure.

The study involved distribution system modeling of all the major water systems in the Washington area. Model runs were made to determine the ability of the systems to maintain adequate pressure and acceptable velocities while allocating demands between reservoir and river sources. New lines were added to the models to try to improve system performance. Once the ability of the distribution systems to adapt to different demands was determined, a feasible operating rule which minimized use of the local reservoirs whenever possible was devised. This rule was then incorporated in a hydrologic simulation model which tracked reservoir levels over the drought of record using demands projected for year 2030.

The conclusions of the finished water interconnections study were unexpected. No amount of construction of new distribution lines could increase the ability to improve yield by altering system operation. To the contrary, the EXISTING distribution systems, with proposed improvements required for NORMAL, non-drought operations, could be operated so as to ensure the availability of water to support the peak capacity of the reservoir treatment plants whenever the Potomac was low. In fact, simulation of operations using 2030 demands failed to lower the reservoirs below 40% of capacity.

In retrospect, the reasons for the flexibility of the system are obvious. First, the major parts of the system are designed to handle peak demands (160% of the Washington area average) which occur quite infrequently. Smaller system components are designed to accommodate fire flows, proportionately even larger. Nearly all the time this excess capacity is available to accommodate flexible operating rules designed to maximize yield.

Minimum flows in the Potomac generally occur in the fall and do not coincide with peak demands, which occur in July and August. Peaking problems are minimized when full capacity operation of the reservoir treatment plants is needed.

The reason for the availability of water in a local reservoir to support withdrawals over and above the safe yield, given a flexible operating rule, is also simple. The critical period for safe yield analysis on the local reservoirs is approximately nine months. The critical period for low flows in the Potomac is much shorter, about four months; it is a much larger river than those that feed the local reservoirs, and the demands are a much smaller percentage of the average flow. Therefore the rule amounts to taking water from the reservoirs at a higher rate, but for a shorter time. The volume of water taken is still the same.

The Corps called the new operating rules "reregulation"; and the WSSC and FCWA immediately indicated that they would implement such procedures. The rules increased the yield of the Patuxent for water supply from 35 mgd to 65 mgd (the capacity of the treatment plant). The Occoquan yield went from 55 mgd to 112 mgd. The total increase is nearly 90 mgd, or 100%. Pumping costs are lower for the FCWA, since its Potomac intake is at a higher elevation than the Occoquan. There is a small increase in operating costs for the WSSC, where pumping costs from the Patuxent are somewhat less than from the Potomac. The increase in yield is nearly cost-free.

Analyzing the Risk

Risk analysis, the technique which makes defining the start of a drought and quantifying the risk of continued drought possible, was first applied locally in response to the Occoquan drought of 1977. As the reservoir dropped to record low levels at the end of August, and concern over the water supply for 650,000 people grew more and more serious, ICPRB contacted the Systems Group of the U.S. Geological Survey for help in quantifying the danger. A simulation starting with the reservoir at its then current contents, assuming current demands and a repeat of the drought of record left the reservoir completely dry for an extended period. (Figure 8)

While this did indicate a potential water supply problem, it provided little indication as to the actual probability that a problem would occur. In an attempt to estimate that probability, a similar simulation was run for every year in the hydrologic record. Four of 26 years emptied the reservoir! The risk of disaster was real indeed.

Worse, 4 of 26 was certainly an underestimate of the real probability. Most of the twenty-six years in the record had normal or above normal streamflow during the summer; streamflow during the summer of 1977 had been quite low. The ground was extremely dry, and could be expected to soak up substantial rain without producing runoff. Certainly the streamflow following normal summers was not representative of what might happen in the fall of 1977. In order to make the risk estimates produced by the multiple simulations valid, a set of "equally likely", rather than historical, streamflows had to be used.

Two methods were available for producing equally likely streamflow traces. The first used statistical analysis to determine the serial correlation in monthly streamflows. With that information, the techniques of synthetic hydrology were adapted to produce equally likely synthetic traces of streamflow conditioned on the low flow of previous months. The technique is simple and inexpensive, and requires only historical streamflow data to implement.

Alternatively, the NWSRFS Extended Streamflow Prediction technique can be used. Extended Streamflow Prediction employs a rainfall-runoff model, calibrated by adjusting the model parameters so that historical daily rainfall and other meteorological inputs produce streamflow outputs which match historical streamflows. The model is then brought to "current conditions" by using the meteorological data of the past few months as input. Equally likely traces are generated by running historical meteorological data for every year in the record, starting on the date of the forecast, through the model. The key assumption here is that, unlike streamflow which depends on the dryness of the ground, a repeat of any year's weather is in fact equally likely. The difficulty of producing accurate long range weather forecasts bears out this assumption. (Figure 9)

In the East, the value of Extended Streamflow Prediction is most apparent in the late spring and early summer. Evapotranspiration during the summer substantially exceeds average rainfall. Therefore, ground water, and thus base flow, steadily and predictably decreases through the season. Differences in the condition of the ground at the beginning of the summer can change the probability of extreme low flow at the end of the summer by as much as tenfold. If the ground is wet at the beginning of the summer, a water supply drought is extremely unlikely. Conversely, dry conditions at the beginning of the summer indicate that the potential for serious drought exists, and that precautions should be taken. The technique can identify the start of a potential drought early enough that modest changes in operations can avoid the prospect of serious shortages later on. (Figure 10)

In 1977 the technique of risk analysis was immediately applied to determine the risks associated with continuing drought in the Occoquan sub-basin. Even in late October, the dry soil conditions increased risks of running the Occoquan Reservoir to unacceptably low levels by a factor of 2. Changing the rate of withdrawal assumed in the simulations determined the reduction necessary to reduce risk to acceptable levels. Only a modest decrease was enough to reduce risk at the end of October by a factor of 5, from 15% to 3%.

The credible, quantitative assessment of risk was most useful to the FCWA in the politically charged atmosphere surrounding the 1977 drought. To use Potomac water the FCWA's new treatment plant had to be located in a relatively undeveloped portion of the county, and that location was opposed by citizen groups concerned about development patterns. FCWA was accused of "manufacturing" the drought to justify its new treatment plant. Risk analysis allowed the utility to unassailably demonstrate the existence of the problem, to determine the required reduction in demand, and to prove that heroic measures such as closing businesses were not required to save additional water.

Operating Rules

In late 1977, the Department of Geography and Environmental Engineering, of The Johns Hopkins University in cooperation with ICPRB, received grants from the Maryland Department of Natural Resources, the Virginia State Water Control Board, and the Maryland Water Resources Research Center (through the U.S. Office of Water Research and Technology) to investigate future operating rules for Bloomington Lake which would increase its yield for water supply. The first work involved using linear programming (an optimization technique) to establish upper bounds on yield. Assuming perfect forecasting of demand and flow on a weekly average basis, and perfectly coordinated operation of upstream and downstream reservoirs, the study evaluated the tradeoffs between safe yield operation and upstream operations to meet downstream demands. (Figure 11)

The results were surprising. The upper bound was over a billion gallons per day, far in excess of projected demands. Moreover, that kind of yield could be achieved while still meeting upstream demands more than twice as large as expected. Unfortunately, while the results made sense to the analysts, they were extremely difficult to explain to the managers and operators.

The Potomac River Interactive Simulation Model (PRISM) was developed at Johns Hopkins to overcome the problem of explanation. As originally programmed, PRISM was a computer game, to be played by the utility operators. At its heart was a reasonably realistic weekly simulation model of reservoir and utility raw water operations. The computer provided the players with the information they would have in operating through a real drought, and asked them to make operational decisions. The effects of those decisions were then simulated and the results became information needed for the next round of decisions. Good decisions and good luck (the forecasts were not always right) were needed to keep water shortages from occurring and the amount of water wasted to a minimum.

The main cause of shortages and wasted water was the long travel time between the upstream reservoirs and the Washington area. Releases made a week in advance and predicated on a forecast of no rain were almost always too large; rain fell sometime during the week, somewhere in the 11,000 sq. mi. basin. The extra water flowed, unused, past the intakes to the estuary. But if releases were based on a forecast of rain, inevitably no rain materialized and large shortages developed. PRISM graphically illustrated the problems of operating under uncertainty and the benefits of cooperative operations in the local area, without the necessity of a real drought to drive the message home.

The Corps recognized the value of the simulation model inherent in PRISM and adapted it to its own use in the Corps Washington area study. In 1979, the Corps integrated the results of the PRISM modeling, the finished water interconnection study, their new demand forecasting work, and many other studies to produce the Metropolitan Washington Area Water Supply Study interim report. In a radical departure from previous recommendations, the Corps emphasized local solutions to the problem, specifically reregulation, a small local reservoir, and a raw water interconnection between one or both of the local reservoirs and the Potomac. The Corps noted that regional cooperation in operations and construction of facilities could greatly reduce cost, but noted the potential difficulties in reaching the necessary regional agreements.

The local utilities decided to try to work together. In conjunction with the states of Maryland and Virginia and the District of Columbia, they asked the ICPRB to form a section for Cooperative Water Supply Operations on the Potomac, to be called CO-OP. Founded in late 1979, CO-OP's task was to develop, integrate, and formalize the tools and techniques required for joint daily operations of the utilities during droughts. When the Corps formally presented its interim report to the states and utilities in December 1979, the utilities agreed to work toward the formation of a WMA Water Supply Task Force, patterned on the successful Bi-County task force, to try to formulate a regional solution and negotiate the required agreements. CO-OP became the technical staff to the new task force.

CO-OP completely revamped the PRISM model to develop daily operating rules. Daily operations were vital because of: a) the daily nature of utility operations, b) the latest information from the USGS indicated that travel times from the upstream reservoirs were not seven but four to five days, c) forecasts changed day to day, and d) water use varied substantially day to day. The first two were easily incorporated in the new daily model.

CO-OP entered into an agreement with the National Weather Service to attack the forecast problem. Working closely together, the two agencies calibrated the NWSRFS for the entire Potomac basin, and modified the computer programs to produce the output necessary for risk anaylsis.

CO-OP, the utilities, Johns Hopkins and the National Weather Service all contributed to the development of techniques for producing synthetic demand traces. The traces had to preserve not only the variability of daily demand, but also the cross-correlation of demand between the utilities and the tendency of demands to increase substantially during hot, dry, drought-like weather. The latest 10 years of demand and meteorological data were analyzed using econometric techniques to build the forecast model. The forecast model was then used as the core of a synthetic generator similar in form to a synthetic streamflow generator.

Some basic assumption about water supply emerged. There is substantial serial correlation in daily demand; by far the best predictor of tomorrow's demand is today's. Of all the weather parameters investigated, temperature is the most important. Day of the week also influences demand. For the inner city area served by the WAD, demands are significantly lower on the weekends. For the suburbs, day of the week exerts little influence on the average demand, but makes a substantial difference in variability. (Figure 12)

Using the Model

The Washington Metropolitan Area Water Supply Task Force, composed of one member each from the Montgomery and Prince George's County Councils, the Fairfax County Board of Supervisors, and the D.C. City Council, had its first meeting in February 1980. It approved a work plan to:

a) Define the demands to be met;

b) Determine the available supply;

c) Evaluate alternatives for additional supply; and

d) Choose the most desirable alternatives.

A citizens advisory committee, with members appointed by the executives of each of the jurisdictions represented on the Washington Metropolitan Area Water Supply Task Force was also formed. The technical advisory committee to the Washington Metropolitan Area Water Supply Task Force consisted of the chief operating officer of the WSSC, WAD, and FCWA. The General Manager of the WSSC chaired both the Water Supply Task Force and the technical advisory committee. The committees rapidly agreed to use the Corps Washington area study's demand projections, completing the first task.

CO-OP was asked to help determine the available supply, using the new CO-OP model. The first review of the model results made it clear that close cooperation between CO-OP and the utility staffs was necessary to refine the CO-OP model to accurately reflect all the constraints on daily operation. This took about six revisions of the model.

The effort resulted in increased credibility for the model. The Water Supply Task Force Technical Advisory Committee and CO-OP then began experimenting with different forms of operating rules. One of the best, called the difference rule, is also one of the simplest. To determine upstream releases under this rule, the natural flow in the Potomac at Washington on the date of the release is subtracted from the total demand (including required instream flow) from all sources expected on the day the release will arrive. This is equivalent to assuming (or forecasting) that the flow will remain unchanged over the time of travel. The difference (hence "difference rule") represents the total additional water which will be needed if the natural flow remains constant. The difference is adjusted by subtracting the amount desired to be taken from the local reservoirs and adding a safety factor.

The difference rule was used to evaluate the supply capabilities of existing and proposed projects. The rule was simple and practical. There was no operational experience with the NWSRFS (then being calibrated for the Potomac by CO-OP and the National Weather Service). Any improvement in operations made possible by improved short range (5-7 day) forecasts would provide a margin of safety in the estimates of reliability. But because of the large drainage area, low flows in the Potomac are relatively stable. Thus, the assumption that flow would not change over the travel time produced generally reasonable forecasts for use in simulation.

The simulations demonstrated that it was possible to meet the Washington area water requirements, including a 100 mgd flow-by, through the year 2000 - without the additional pipeline and small reservoir (cost $100 million) recently recommended by the Corps. But, a critical examination of the results by the technical advisory committee revealed an undesirable consequence of not upgrading the existing system.

Several of the droughts simulated drew the reservoirs down significantly during the late summer. Such drawdowns would call into question the ability of the utilities to meet their long term demands during those droughts, where the techniques of risk anaylsis applied. The reason for the drawdowns was not lack of water, but lack of local operational flexibility.

Reregulation was the source of existing local flexibility. When releases from the upstream reservoirs (made 5-7 days ahead) turned out to be inadequate, withdrawals from the local reservoirs could be increased to take up the slack. The increase was limited by the capacity of the treatment plants on the local reservoirs, about 180 mgd. Given the minimum withdrawals required from the reservoirs, about 30 mgd, the available flexibility was on the order of 150 mgd.

Unfortunately, 5 to 7 day flow forecasts are not that accurate. To ensure enough water downstream, the margin of safety in the upstream releases must be about 100 mgd. Most of this water (almost 70% of the water released from the upstream reservoirs) flowed by the intakes unused. Further, because the extra release is in the Potomac, the average use of the local reservoirs was undesirably low. The local reservoirs stayed full while the upstream reservoirs dropped precipitously.

Little Seneca: Big Flexibility

The availability of additional local flexibility, in the form of a small local reservoir, eliminated the operational problems. Operational simulations showed that the ability to correct for errors in streamflow forecasts as needed, day by day, using releases directly to the Potomac from a small new local reservoir would eliminate the need for a large margin of safety in the upstream release, reduce the unused portion of the releases from 70% to about 10%, and allow full utilization of the storage in the existing local reservoirs. The additional water thus made available was sufficient to meet water requirements through the year 2030, based on Corps projections. (Figure 13)

Little Seneca Reservoir in Montgomery County had been recommended by both the Bi-County study and the Washington area study interim report. The lake would also serve as a recreational asset, and spread regionally, the costs were quite modest. The Water Supply Task Force committees both agreed that Little Seneca should be a regional undertaking, and that an agreement specifying cost allocation for Little Seneca and the reimbursable water supply costs in Bloomington, as well as cooperative operation of all regional water supply facilities, be developed.

The Water Supply Task Force adopted this recommendation, "in principle" in January 1982, and charged the technical advisory committee with negotiating the necessary agreements. Both the WSSC and Montgomery County, in a major move away from factionalism, endorsed the concept of Little Seneca Reservoir as a regional facility.

Construction of Little Seneca still required a permit from the Corps, with an associated environmental assessment or impact statement. Both the U.S. Environmental Protection Agency and the U.S. Fish and Wildlife Service were in a position to influence the Corps' decision on the permit, and both initially objected to the project because of the associated impacts. The issue of required flow-by also needed resolution.

As part of its Low Flow Study, Maryland Department of Natural Resources in conjunction with the U.S. Fish and Wildlife Service and ICPRB, calibrated the Fish and Wildlife Service Instream Flow Group habitat simulation for the Potomac from Great Falls to Little Falls. The Instream Flow Group model attempts to quantify the relationship between flow and available fisheries habitat. Using the simulation, the biologists involved determined that the juvenile stage of the smallmouth bass was an appropriate indicator species, and that extreme low flows for periods as short as one to two days were critical. The insight thus gained was sufficient to guide the modification of the water supply operating rules developed previously.

With Little Seneca Lake operational, and using a sliding schedule for flow-by (higher in the early summer and lower in the fall) the frequency of occurrence of extreme low flows could be reduced to below "natural" levels for the stretch of river above Little Falls. The few years in which droughts last into the fall, and thus flows were below natural, were more than counterbalanced by the many years in which augmentation in the early summer kept flows above their natural low. (Figure 14)

The simulation runs used to develop the modified operating rules showed them to be entirely compatible with water supply operations. Water requirements were always met, and the relative risks of water shortage (from risk analysis) were not significantly increased. The results of this low flow study led to a resolution of the issues regarding Little Seneca and flow-by. An Instream Flow Committee was chartered by the Maryland Department of Natural Resources, and organized by ICPRB to advise on the operation of reservoirs to improve fisheries habitat and recreational opportunity. Because most of the capacity of the reservoirs is not needed for water supply except during infrequent extreme drought, this committee has the flexibility to produce substantial benefits on a continuing basis.

The issue of cost sharing remained, and once again the model provided a common basis for negotiation. CO-OP, as the keeper of the model, had no direct role in the negotiations, and thus remained "neutral". Each utility directed its own runs of the CO-OP model, modified to allocate the shortages which could occur under the operating rules which would be used if agreement was not reached. The shortages were allocated using each utility's own interpretation of the riparian doctrine of water rights, and the Low Flow Allocation Agreement. Several hundred simulation runs were made, using different droughts and assumptions, before the utilities were satisfied that an equitable allocation of cost had been devised.

Joint Operation

The implementation of the joint operating scheme is designed to minimize interference with normal utility operation. Joint scheduling of operations does not begin until drought conditions exist. Drought conditions are defined in two ways: a) flow in the Potomac below 200% of expected withdrawals, or b) the probability of meeting all water requirements and refilling all reservoirs by the following June below 98%. The probabilities are defined using the NWSRFS and risk analysis.

When drought conditions exist, releases from Bloomington are scheduled using the difference rule explained above. The CO-OP demand model is used to forecast demand. The desired withdrawals from the Patuxent and Occoquan are set at their safe yields, and, until Little Seneca is operational, a margin of safety of 100 mgd is used. With Little Seneca complete, that margin of safety will not be required. Construction on Little Seneca started in September 1982; completion is scheduled for 1986.

Downstream operations strive to maintain balanced storage in the Patuxent and Occoquan reservoirs. Each morning, target Potomac withdrawals are set for the WSSC and FCWA. Both utilities attempt to meet their remaining requirements from their local reservoirs. Mid-day reports are analyzed in the afternoon and modest corrections in withdrawals are made to further balance the systems.

A convincing demonstration that the procedures developed by CO-OP actually worked took the form of a drought exercise. The NWSRFS was used to produce a "quasi-historical drought" using artifically set antecedent soil moisture conditions and the actual meteorological data from a rainfall short year. (Figure 15)

Each utility manager and the District Engineer of the Baltimore District Corps of Engineers brought a small technical team to the drought exercise, much like a war game with each day compressed to about 20 minutes. Decisions regarding daily operations of the reservoirs and other raw water facilities were made on the basis of information which would be available in real time.

Because the drought was based on a historical meteorological trace, weather forecasts, with all their associated uncertainty, were available. Similar to the exercise done with the PRISM model earlier, the 1981 exercise established lines of communications, and tested operating procedures. The problems found were corrected as the exercise progressed. Not only did the exercise establish beyond doubt that coordinated operations were feasible and could provide adequate water, they also prepared all concerned for dealing with an actual drought. The second annual drought exercise (October 1982) was run with a modified format (one day equal one day) and used to test the reliability of the improved demand forecasting model.

Writing the contracts to implement the joint operations and cost sharing was a formidable task. The interstate nature of the agreements, the unique character of the government of the District of Columbia, and the Congressionally mandated responsibilities of the Corps of Engineers created an extraordinarily complex situation. However, and in large part due to their familiarity with the simulations and the drought exercise, the negotiators (the utility managers) were absolutely convinced of the feasibility and desirability of joint operations.

Eight separate but interlocking contracts were executed on July 22, 1982 (Table 4). They are a tribute to the skill of the lawyers involved and the good will of the participants. After almost 30 years, the problem of assuring an adequate supply of water for the WMA had been resolved.

The Solution: Innovative Engineering

Providing the Washington area with an adequate water supply was a complex engineering, social, economic, environmental, and institutional problem. Large scale structural solutions had been proposed and found wanting. A fresh approach was required. It was provided by advances in water resources engineering analysis over the last 20 years.

The techniques of water resources engineering systems analysis--linear programming, synthetic hydrology, statistical analysis, hydrologic modeling, and computer simulation--were adapted to produce a predominantly non-structural engineering solution to the problem. Many of the techniques were used together for the first time, and others were subject to major modification specifically to address this problem.

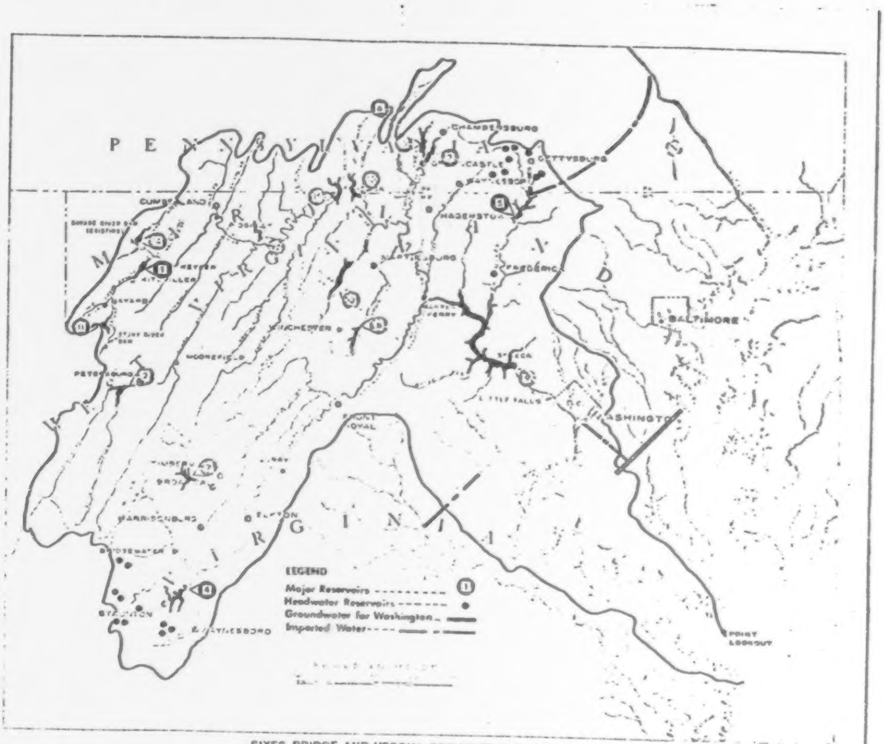
An "insoluble" problem of almost 30 years standing was resolved. The "impossible" task of achieving regional cooperation was accomplished. Between $200 million and $1 billion were saved compared to previously evaluated alternatives. Moreover, the solution was not achieved at great environmental expense. In fact, the environmental benefits of increased minimum instream flow and the recreational opportunities provided by Little Seneca Lake may outweigh any environmental impacts.

Significantly, the integration of engineering analysis and the decision making process, made possible by computer simulation, played an essential role in implementing the solution. Without the convenient and credible framework for decision making provided by the model, negotiations between the parties would have been far more difficult.

Perhaps the most important aspect of the solution to the WMA water supply problem is the example it sets. Here is proof that non-structural engineering alternatives, including better management of existing facilities, can solve some of the most difficult socio-political problems and achieve substantial cost savings. Because the replacement value of our existing facilities is substantially greater than the present value of expenditures on new facilities at current rates, the potential benefits of widespread application of the types of engineering analysis used in the Washington area are enormous.

Credits

Washington Suburban Sanitary Commission;
Fairfax County Water Authority;
District of Columbia Department
  of Environmental Services;
Maryland Department of Natural Resources;
Virginia State Water Control Board;
U.S. Army Corps of Engineers
  Washington Aqueduct Division;
U.S. Army Corps of Engineers Baltimore District;
National Weather Service;
U.S. Geological Survey;
Washington Metropolitan Area Water
  Supply Task Force;
The Johns Hopkins University, Department of
  Geography and Environmental Engineering;
Interstate Commission on the Potomac River Basin;
Interstate Commission on the Potomac River Basin
  Cooperative Water Supply Operations on the Potomac (CO-OP);
Metropolitan Washington Council of Governments.


PENNSYLVANIA
MARYLAND
WEST VIRGINIA
VIRGINIA
CHAMBERSBURG
GETTYSBURG
HAGERSTOWN
CUMBERLAND
MARTINSBURG
FREDERICK
BALTIMORE
WASHINGTON
WINCHESTER
PETERSBURG
MOOREFIELD
SENECA
LITTLE FALLS
FRONT ROYAL
HARRISONBURG
BRIDGEWATER
STAUNTON
WAYNESBORO
POINT LOOKOUT
LEGEND
Major Reservoirs
Headwater Reservoirs
Groundwater for Washington
Imported Water

SIXES BRIDGE AND VERONA PROJECTS AND ALTERNATIVE WATER SUPPLY CONCEPTS—PLATE II

The 16 reservoirs recommended in the 1963 COE Baltimore District Engineer's Report

LIST OF MAJOR RESERVOIRS:

1. *BLOOMINGTON*
2. *ROYAL GLEN*
3. *CHAMBERSBURG*
4. *VERONA (STAUNTON)*
5. *SIXES BRIDGE*
6. *WEST BRANCH*
7. *BROCKS GAP*
8. *WINCHESTER*
9. *SENECA*
10. *LICKING CREEK*
11. *MOUNT STORM*
12. *TOWN CREEK*
13. *NORTH MOUNTAIN*
14. *SAVAGE II*
15. *BACK CREEK*
16. *TONOLOWAY CREEK*

DRAINAGE BASINS SERVING THE METROPOLITAN WASHINGTON AREA

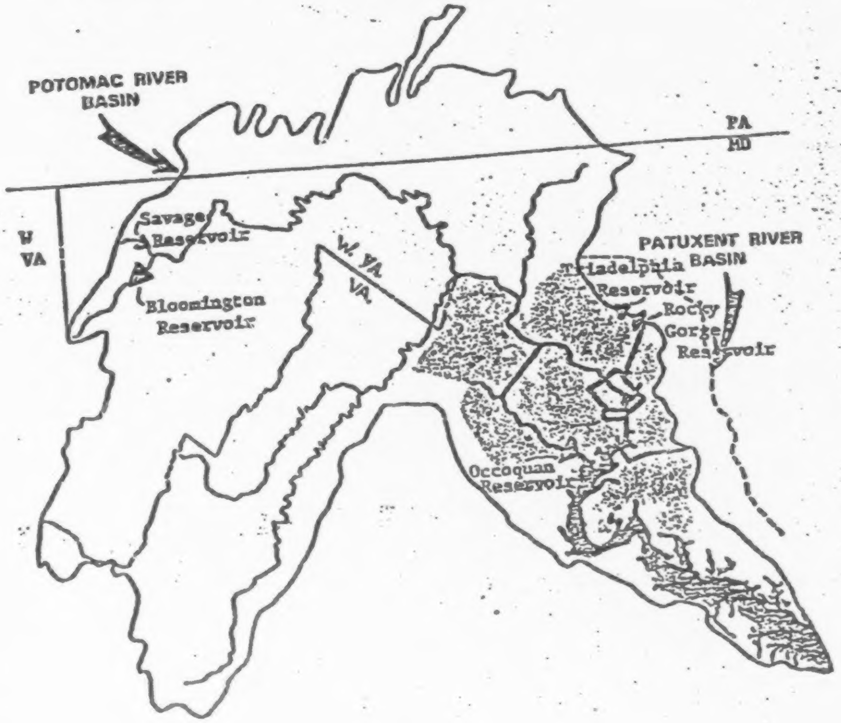
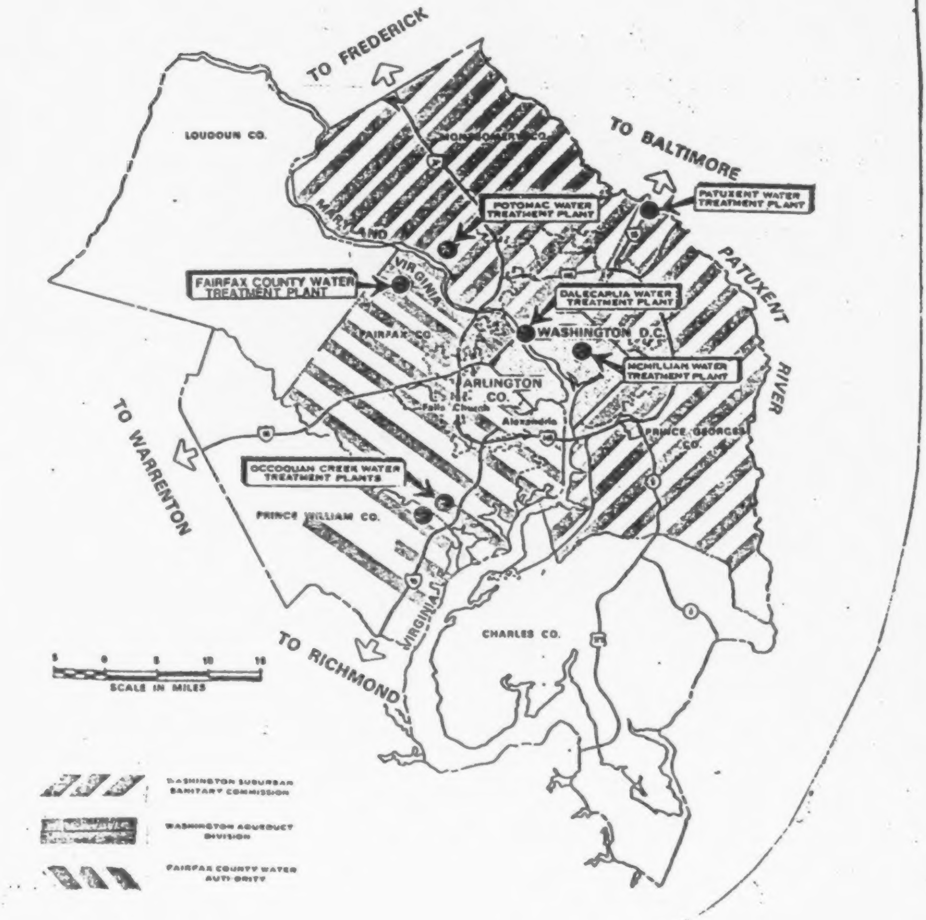

POTOMAC RIVER BASIN
PA
MD
W VA
Savage Reservoir
Bloomington Reservoir
W. VA.
VA.
PATUXENT RIVER BASIN
Triadelphia Reservoir
Rocky Gorge Reservoir
Occoquan Reservoir

FIGURE 1.

MAJOR WATER SUPPLY SYSTEMS - METROPOLITAN WASHINGTON AREA


TO FREDERICK
LOUDOUN CO.
MONTGOMERY CO.
TO BALTIMORE
PATUXENT WATER TREATMENT PLANT
POTOMAC WATER TREATMENT PLANT
MARYLAND
VIRGINIA
FAIRFAX COUNTY WATER TREATMENT PLANT
DALECARLIA WATER TREATMENT PLANT
PATUXENT
FAIRFAX CO.
WASHINGTON D.C.
McMILLAN WATER TREATMENT PLANT
RIVER
ARLINGTON CO.
Falls Church
Alexandria
PRINCE GEORGES CO.
TO WARRENTON
OCCOQUAN CREEK WATER TREATMENT PLANTS
PRINCE WILLIAM CO.
VIRGINIA
CHARLES CO.
TO RICHMOND
SCALE IN MILES
WASHINGTON SUBURBAN SANITARY COMMISSION
WASHINGTON AQUEDUCT DIVISION
FAIRFAX COUNTY WATER AUTHORITY

POTOMAC RIVER BASIN

SUB DRAINAGE AREA 02-14-10

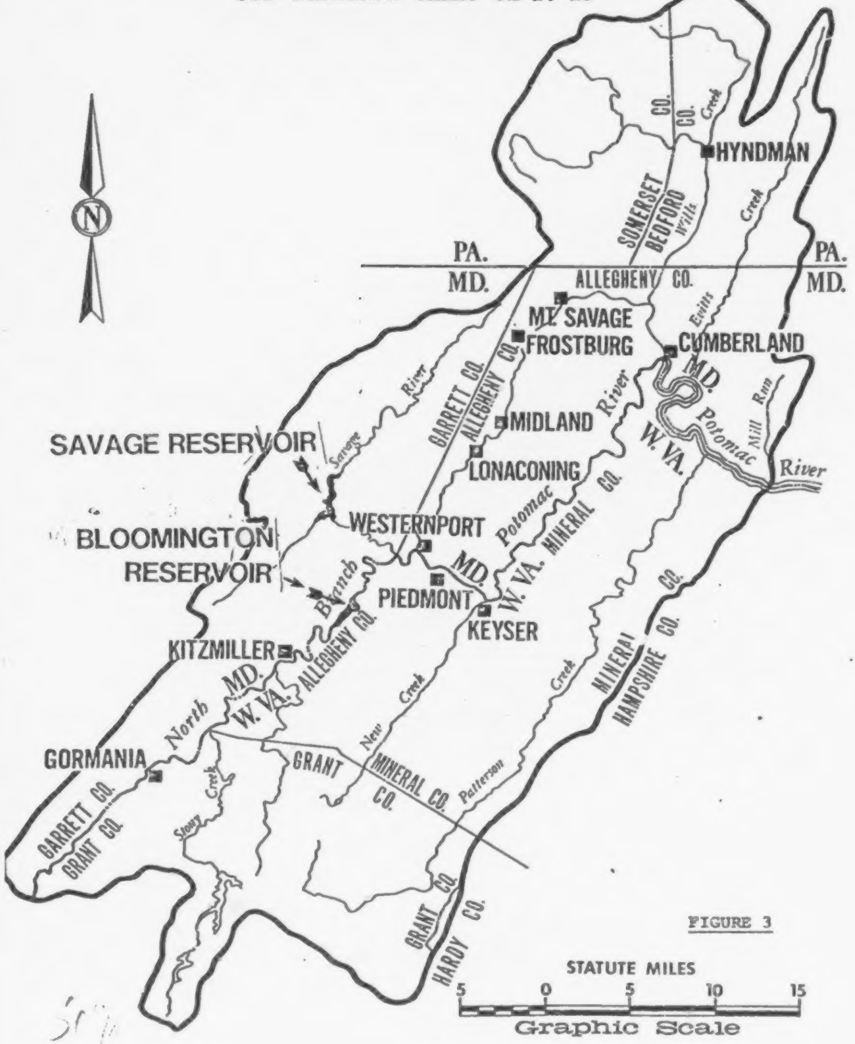

N
PA.
MD.
PA.
MD.
SOMERSET CO.
BEDFORD CO.
Wills Creek
HYNDMAN
Creek
ALLEGHENY CO.
MT. SAVAGE
FROSTBURG
CUMBERLAND
Evitts
GARRETT CO.
ALLEGHENY CO.
Savage River
MIDLAND
LONACONING
River
MD.
W. VA.
Potomac
Mill Run
River
SAVAGE RESERVOIR
BLOOMINGTON RESERVOIR
WESTERNPORT
Potomac
MD.
PIEDMONT
W. VA.
MINERAL CO.
KEYSER
Branch
ALLEGHENY CO.
KITZMILLER
MD.
W. VA.
North
New Creek
Creek
MINERAL CO.
HAMPSHIRE CO.
GORMANIA
Stony Creek
GRANT CO.
MINERAL CO.
Patterson
GARRETT CO.
GRANT CO.
GRANT CO.
HARDY CO.
STATUTE MILES
5
0
5
10
15
Graphic Scale

FIGURE 3

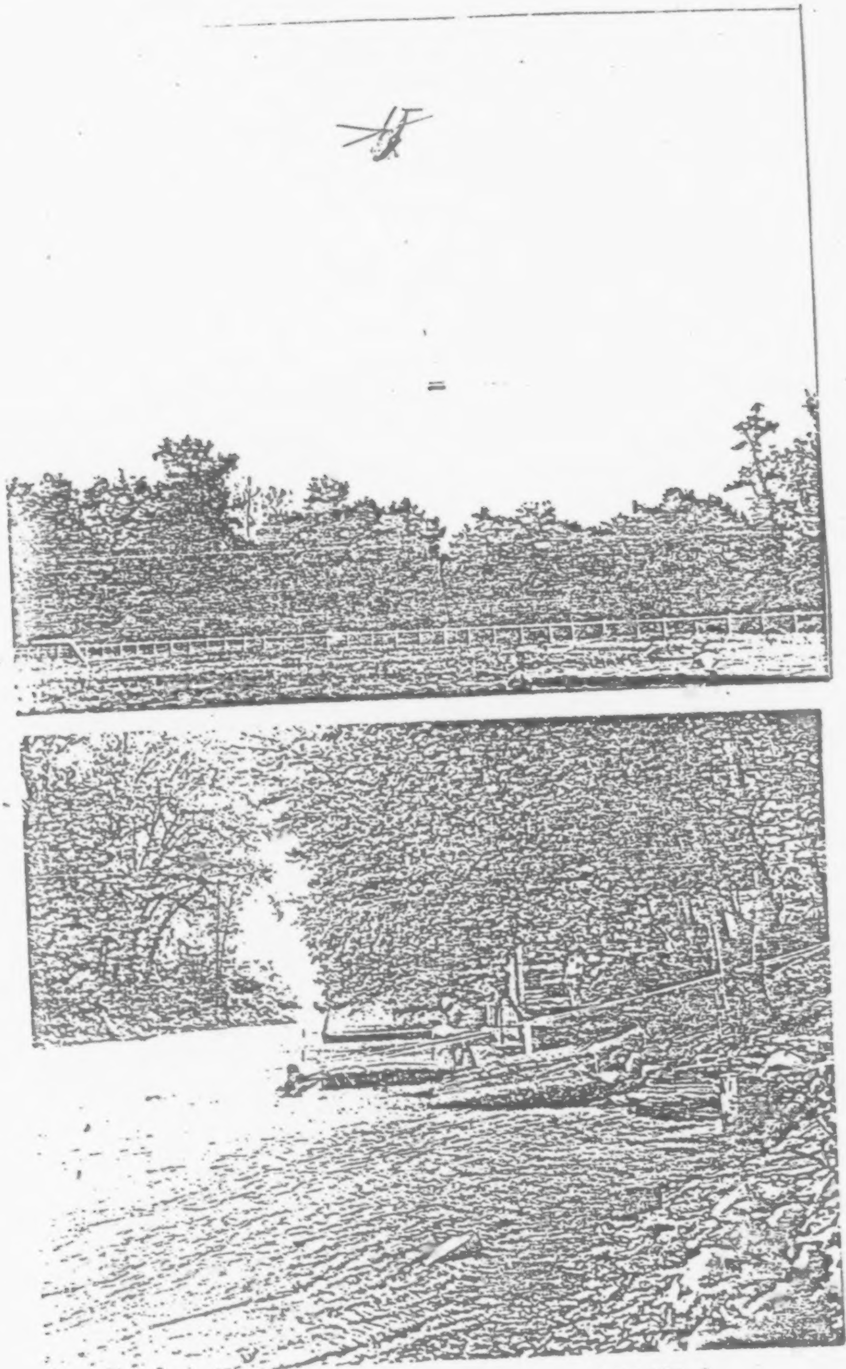


FIGURE 4

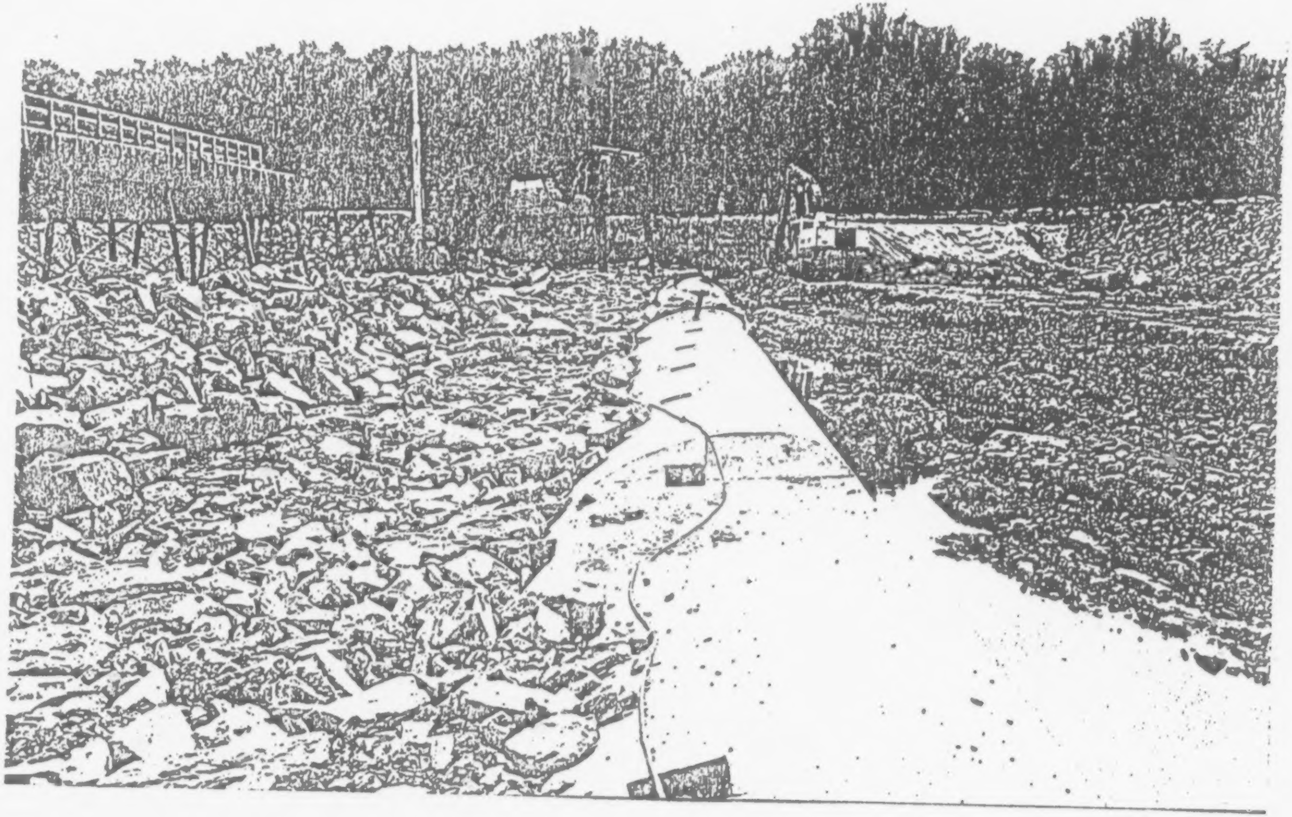


FIGURE 5

SCHEMATIC REPRESENTATION OF PROPOSED RAW WATER INTERCONNECTION ROUTES IN THE MWA

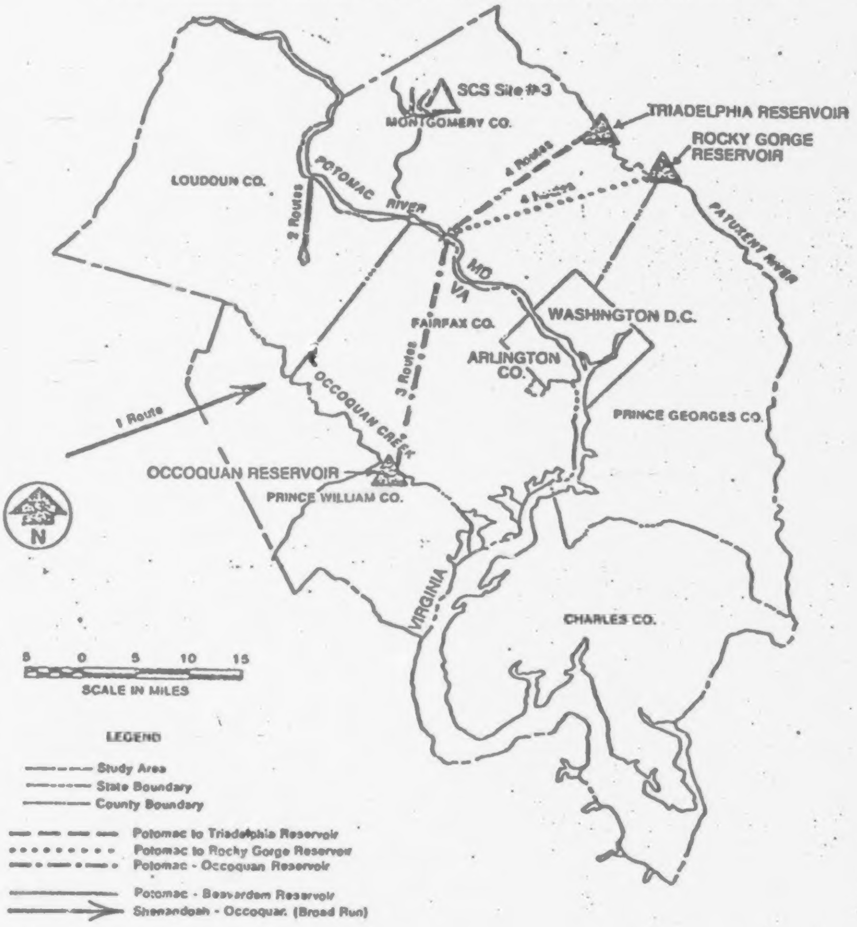

SCS Site #3
MONTGOMERY CO.
TRIADELPHIA RESERVOIR
ROCKY GORGE RESERVOIR
LOUDOUN CO.
POTOMAC RIVER
2 Routes
4 Routes
4 Routes
PATUXENT RIVER
MD
VA
WASHINGTON D.C.
FAIRFAX CO.
ARLINGTON CO.
3 Routes
OCCOQUAN CREEK
1 Route
PRINCE GEORGES CO.
OCCOQUAN RESERVOIR
PRINCE WILLIAM CO.
N
VIRGINIA
CHARLES CO.
5 0 5 10 15
SCALE IN MILES
LEGEND
Study Area
State Boundary
County Boundary
Potomac to Triadelphia Reservoir
Potomac to Rocky Gorge Reservoir
Potomac - Occoquan Reservoir
Potomac - Beaverdam Reservoir
Shenandoah - Occoquan (Broad Run)

FIGURE 6

GEOGRAPHIC LOCATIONS OF THE
PROPOSED BLACK & VEATCH FINISHED WATER INTERCONNECTION ROUTES

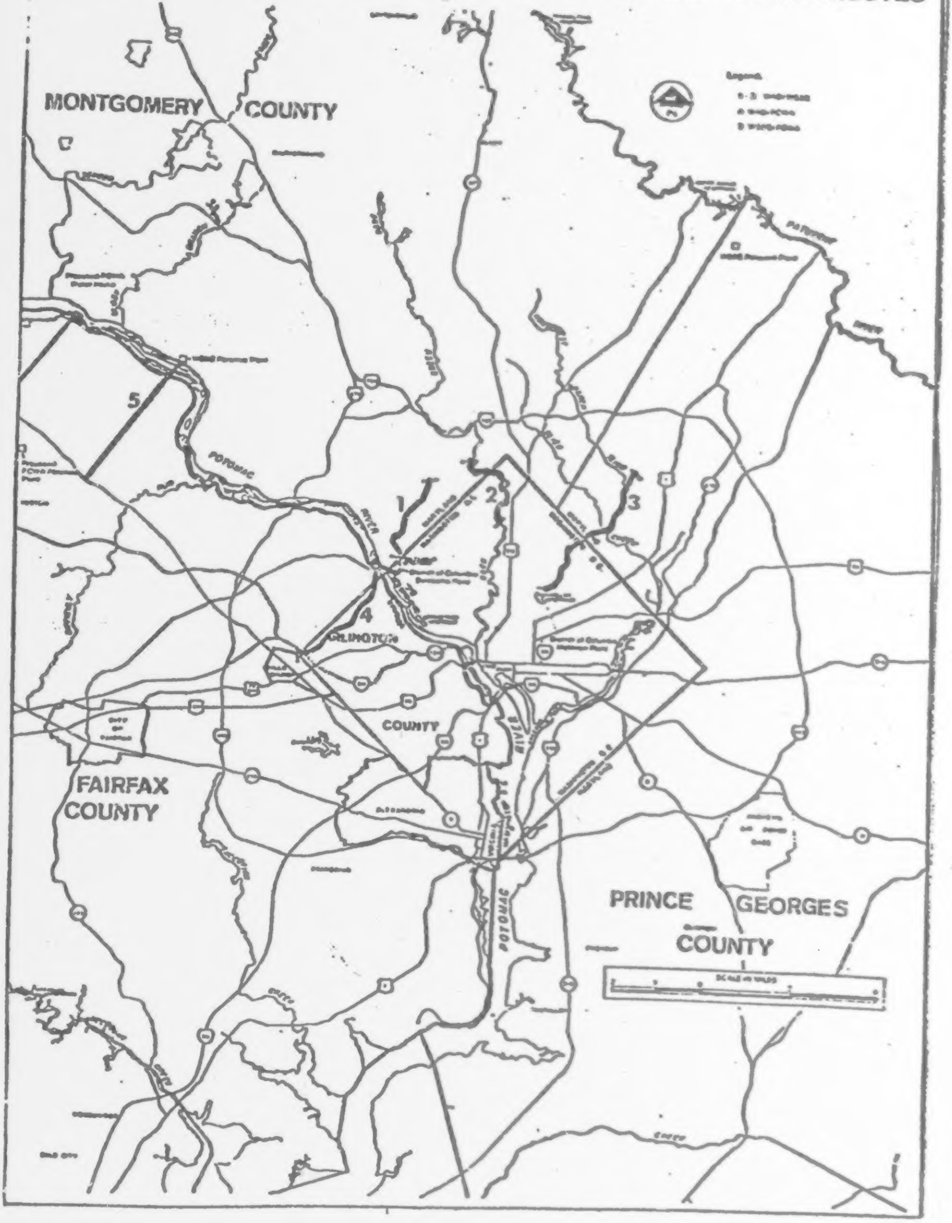
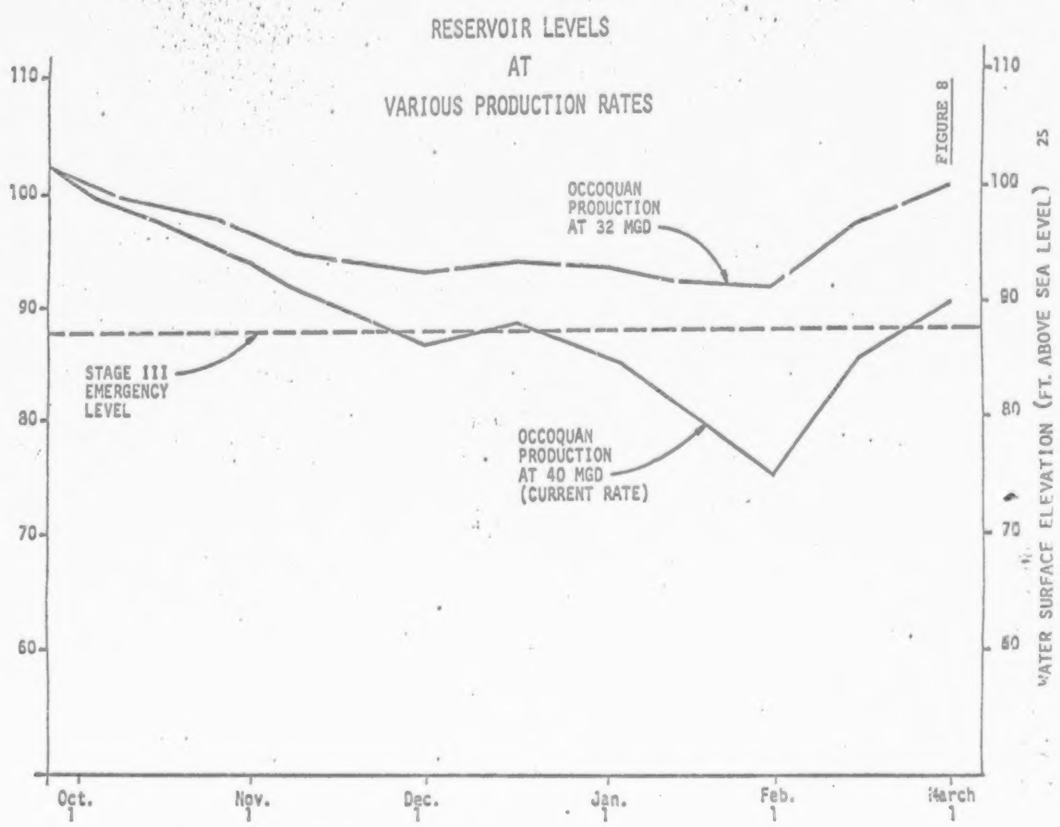

MONTGOMERY COUNTY
5
POTOMAC
1
2
3
4
ARLINGTON
COUNTY
FAIRFAX COUNTY
POTOMAC
PRINCE GEORGES COUNTY

FIGURE 7



RESERVOIR LEVELS
AT
VARIOUS PRODUCTION RATES

FIGURE 8

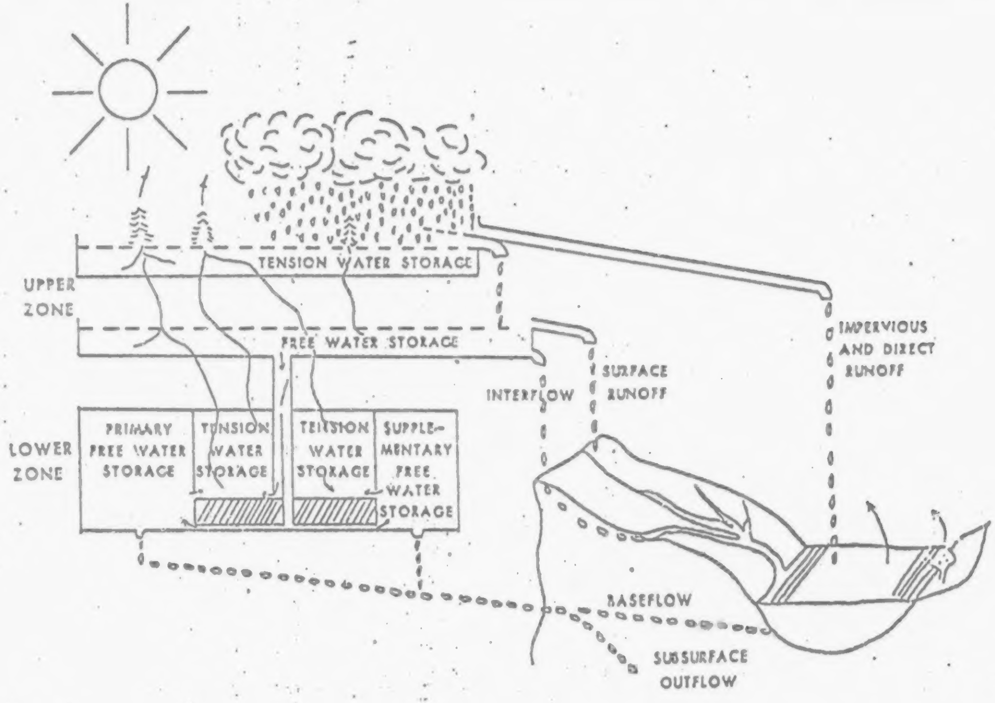
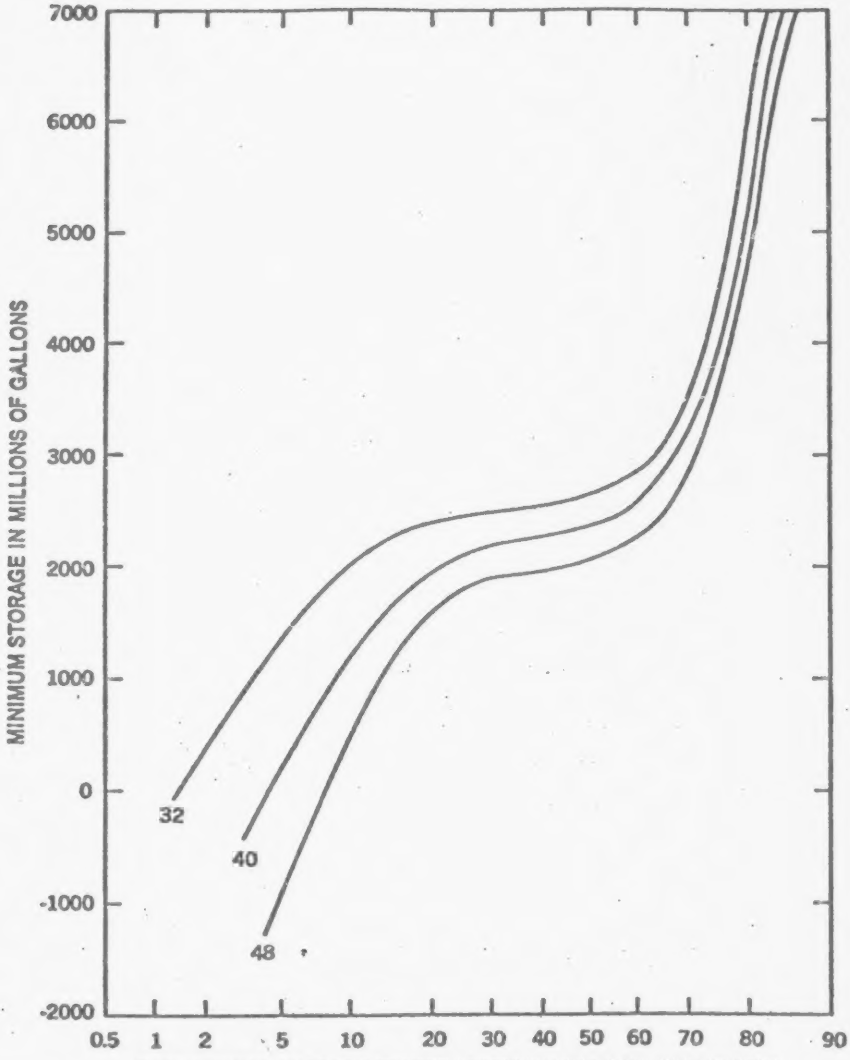

TENSION WATER STORAGE
UPPER ZONE
FREE WATER STORAGE
LOWER ZONE
PRIMARY FREE WATER STORAGE
TENSION WATER STORAGE
TENSION WATER STORAGE
SUPPLE-MENTARY FREE WATER STORAGE
INTERFLOW
SURFACE RUNOFF
IMPERVIOUS AND DIRECT RUNOFF
BASEFLOW
SUBSURFACE OUTFLOW

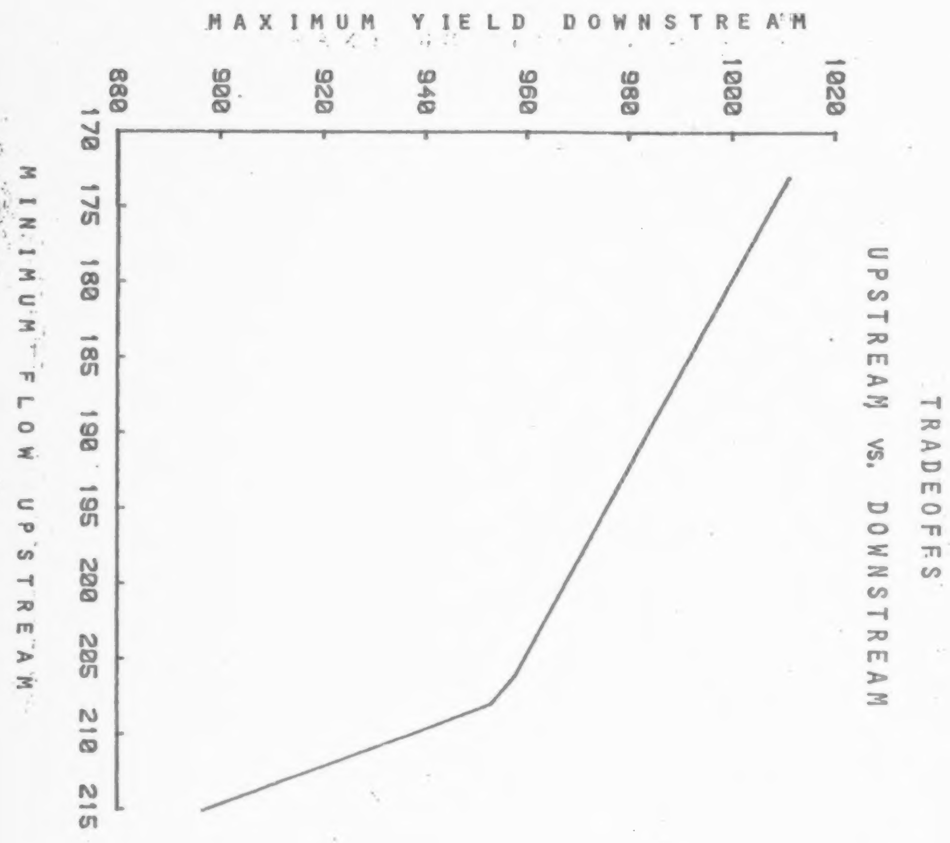
Illustration of the Sacramento Soil Moisture
Accounting Model of the National Weather Service River Forecast System

FIGURE 9



Cumulative distribution functions for S_{min} at 32, 40, and 48 Mgal/d production rates, from Position Analysis based on 22 years with dry-late summer periods.

FIGURE 10


TRADEOFFS

UPSTREAM vs. DOWNSTREAM

FIGURE. 11

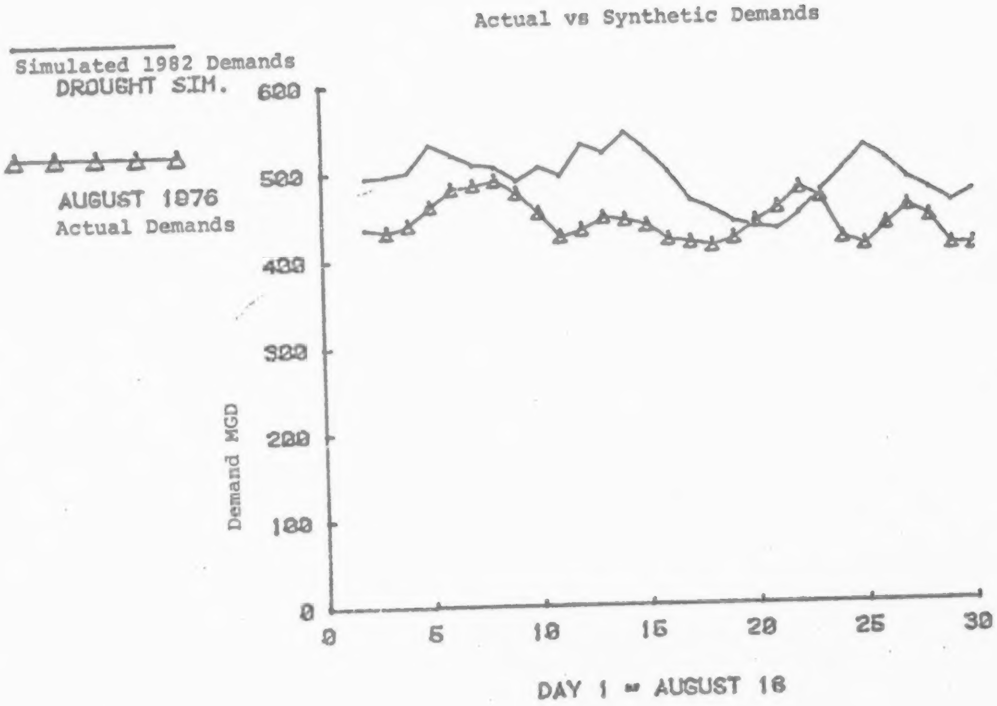

Actual vs Synthetic Demands
Simulated 1982 Demands
DROUGHT SIM.
AUGUST 1976
Actual Demands
Demand MGD
600
500
400
300
200
100
0
0
5
10
15
20
25
30
DAY 1 = AUGUST 16

FIGURE 12

Reservoir Storage
1930s Drought Year 2030 Demands

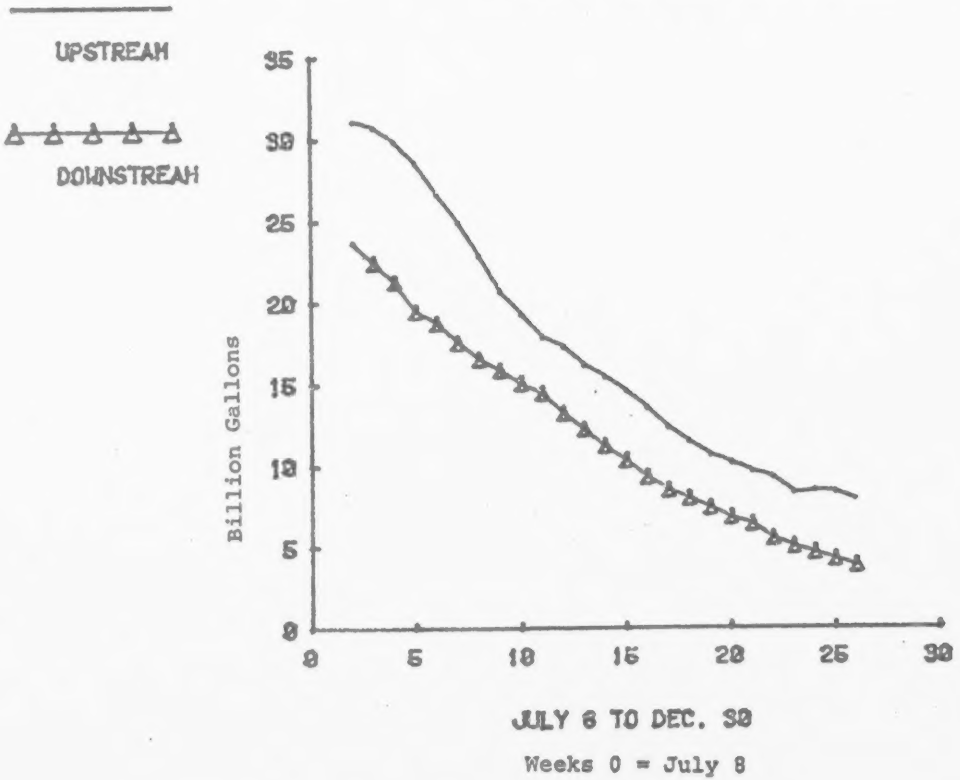


FIGURE 13

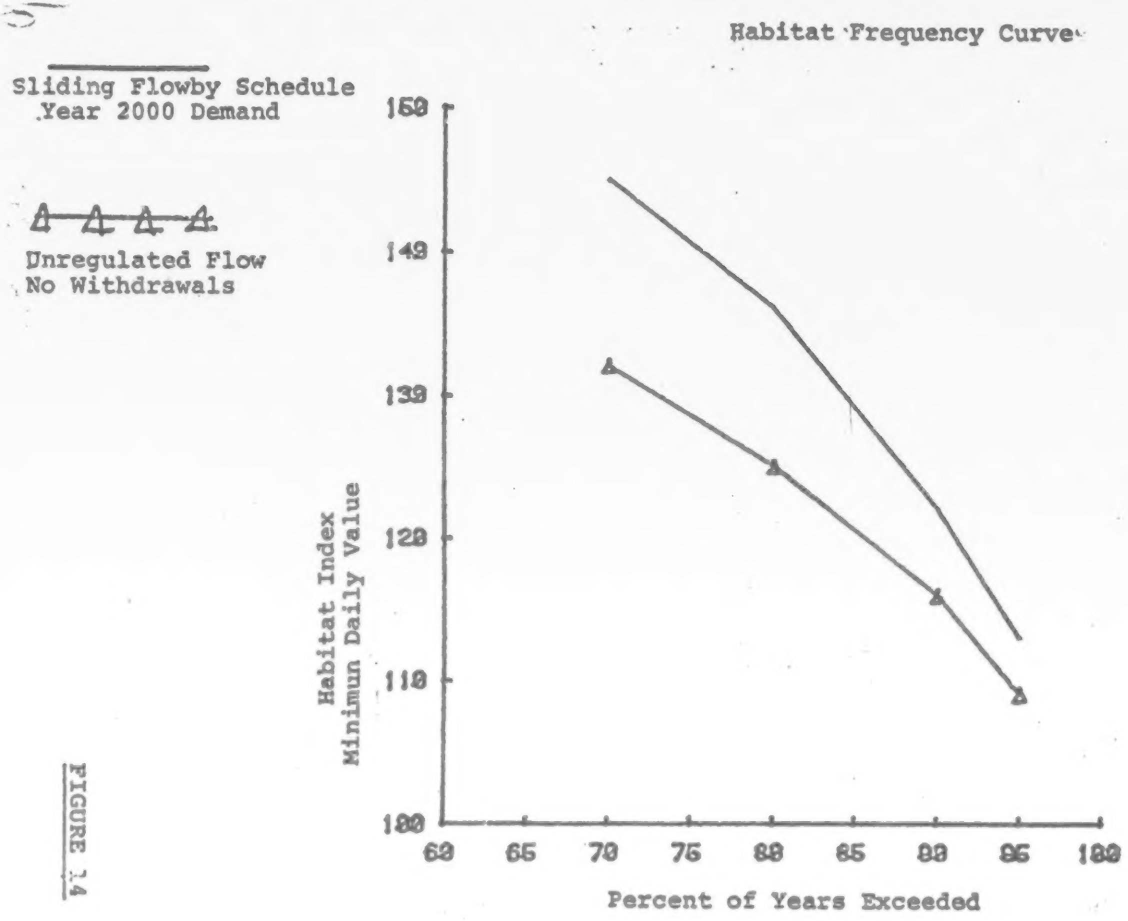

Habitat Frequency Curve
Sliding Flowby Schedule
Year 2000 Demand
Unregulated Flow
No Withdrawals
Habitat Index
Minimun Daily Value
150
140
130
120
110
100
60
65
70
75
80
85
90
95
100
Percent of Years Exceeded

FIGURE 14

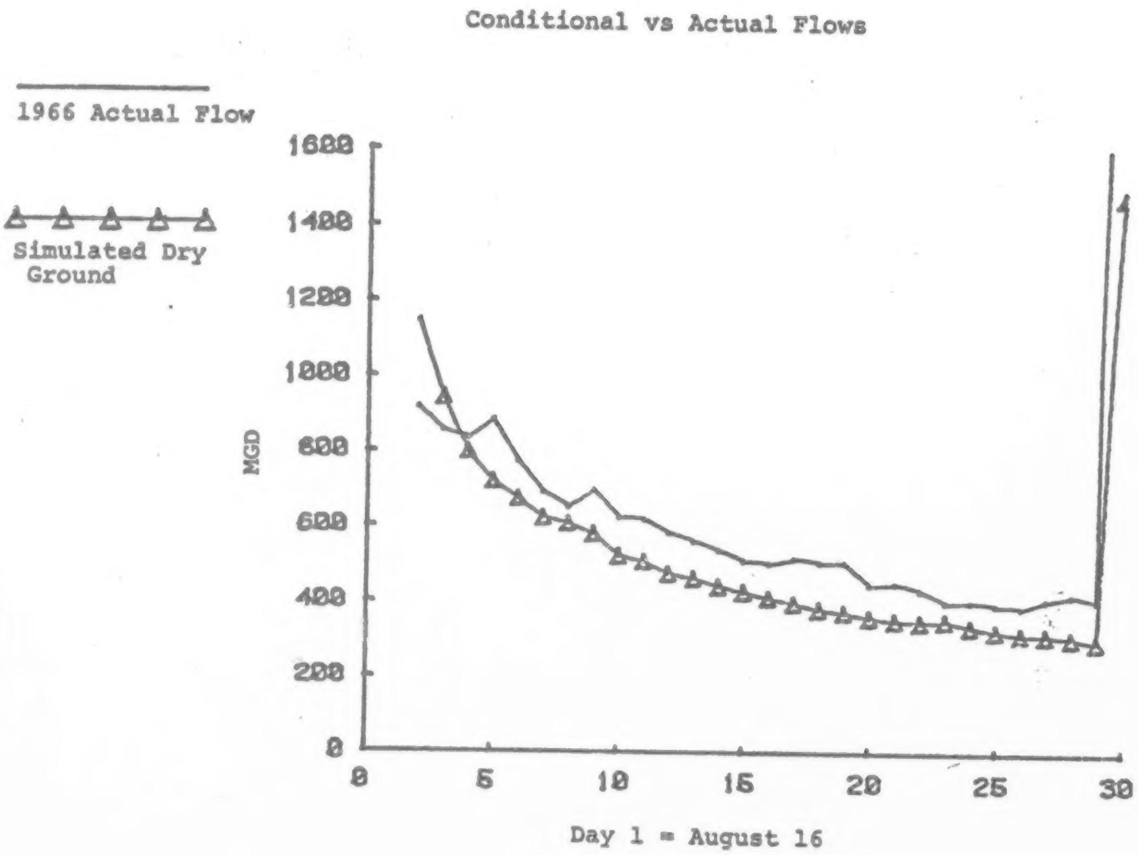

Conditional vs Actual Flows
1966 Actual Flow
Simulated Dry Ground
MGD
1600
1400
1200
1000
800
600
400
200
0
0
5
10
15
20
25
30
Day 1 = August 16

FIGURE 15

Capacities of Washington Metropolitan Area Local Water Supply Facilities

Reservoirs		
Patuxent	10BG	65 mgd treatment
Occoquan	11BG	112 mgd treatment
Little Seneca (under construction)	4BG	
Intakes		
FCWA Potomac		200 mgd
WSSC Potomac		400 mgd
WAD Great Falls		200 mgd
WAD Little Falls		400 mgd

TABLE 2

Safe Yields of Washington Metropolitan Supplies

Potomac River (including Savage Reservoir)	388 mgd
Bloomington Lake	135 mgd
Patuxent Reservoirs (net for water supply)	35 mgd
Occoquan Reservoir	55 mgd
	613 mgd
Less Minimum Flowby	-100
Total of Independently Operated Supplies	513 mgd

TABLE 3

Capital Costs of Alternatives in 1977
Corps of Engineers North East Water Supply Report 1

		Millions	
Alternative		Jan. 1976 Cost[2]	Current[3]
1A	Estuary Treatment	$599	$964
2A	Estuary Treatment AWT[4]	310	500
3	Estuary Treatment AWT[4], Wells	283	456
4B	Sixes Bridge, Verona, Catoctin Reservoirs	123	198
5A	Little Monocacy, Sixes Bridge, Verona, Catoctin Reservoirs	176	283

[1] Bloomington assumed in all alternatives, Bloomington costs not included.

[2] Engineering News Record Construction Cost Index = 2300 per News Final Report.

[3] Engineering News Record Construction Cost Index = 3700.

[4] Advanced waste treatment located upstream of intakes to recycle wastewater.

TABLE 4

List of Water Supply Agreement Signed July 22, 1982

1. Water Supply Coordination Agreement

    Binds all parties to joint operations during drought, assigns responsibility for scheduling release withdrawals to ICPRB CO-OP.

2. Contract for Future Water Supply Storage in the Bloomington Reservoir

3. Novation Agreement for Initial Water Supply - Bloomington Reservoir

    Reassigns ownership from Maryland Potomac Water Authority to WSSC, FCWA, District of Columbia.

4. Novation Agreement Regarding District of Columbia's Payment to the Potomac Water Authority

    Cancels previous contract.

5. Bloomington Lake Payment Agreement

    Provides for legal remedy in case of non-payment.

6. Little Seneca Lake Cost-Sharing Agreement

7. Modification No. 1 Potomac River Low Flow Allocation Agreement

    Removes "1988 Freeze" provision.

8. Savage Reservoir Maintenance and Operation Cost-Sharing Agreement

    Provides for WSSC, FCWA, WAD, Allegany Co., Maryland cost sharing.

WATER SUPPLY COORDINATION AGREEMENT

THIS AGREEMENT, dated for convenience of reference as the _____ day of ______________, 1982, made and entered into by and among the UNITED STATES OF AMERICA acting through the Baltimore District, Corps of Engineers, U.S. Army, functioning through the Washington Aqueduct Division (hereinafter called the "Aqueduct"); the FAIRFAX COUNTY WATER AUTHORITY (hereinafter called the "Authority"); the WASHINGTON SUBURBAN SANITARY COMMISSION (hereinafter called the "Commission"); the DISTRICT OF COLUMBIA (hereinafter called the "District"); and the INTERSTATE COMMISSION ON THE POTOMAC RIVER BASIN SECTION FOR COOPERATIVE WATER SUPPLY OPERATIONS ON THE POTOMAC (hereinafter called the "CO-OP").

WITNESSETH

WHEREAS, the Chief of Engineers is charged with the operation and maintenance of the Washington Aqueduct for the purpose of providing an adequate supply of potable water for distribution to and consumption by the agencies and instrumentalities of the Federal Government situated in the District and its environs, and of providing a public water supply for the inhabitants of the District, and certain communities in northern Virginia; and

WHEREAS, the Authority is an authority established pursuant to the laws of the Commonwealth of Virginia charged with responsibility for providing a safe and adequate public water supply within certain geographic areas of northern Virginia, and is also authorized to enter into agreements to purchase and provide water, and for that purpose is operating and maintaining water treatment facilities and a water distribution system; and

WHEREAS, the Commission is a public authority established pursuant to the laws of Maryland, is charged with the responsibility of providing a safe and adequate water supply within the Counties of Montgomery and Prince George's, Maryland and is also authorized to enter into agreements to purchase and provide water, and for that purpose is operating and maintaining water treatment facilities and a water distribution system; and

WHEREAS, the District is authorized and empowered to contract to provide a safe and adequate water supply to the inhabitants and entities within its jurisdiction and accomplishes this purpose through cooperation with the Washington Aqueduct Division, Corps of Engineers, United States Army, and is also authorized to contract for the purposes described herein; and

WHEREAS, the Interstate Commission on the Potomac River Basin (ICPRB) has created CO-OP devoted to forecasting demand and supply in the Washington Metropolitan Area; and

WHEREAS, CO-OP has developed a program for optimal utilization of all available water supply facilities in the Washington Metropolitan Area, particularly during drought periods; and

WHEREAS, the Aqueduct, the Authority, and the Commission (hereinafter called the "suppliers") now have in place, on the Potomac River, water intakes installed in accordance with appropriate Federal and state laws; and

WHEREAS, the suppliers are governed by the provisions of the Potomac River Low Flow Allocation Agreement, dated January 11, 1978, which is hereby incorporated by reference into this agreement and made part thereof; and

WHEREAS, it is in the mutual benefit of the suppliers to manage Potomac River flows, reservoir releases, and water supply withdrawals so as to reduce or eliminate the possibility that the Emergency Stage of the Low Flow Allocation Agreement will ever be reached or that the allocation formula set forth therein becomes operative.

NOW, THEREFORE, in consideration of the mutual covenants herein contained the parties hereto do hereby agree as follows:

ARTICLE 1. - The suppliers agree to operate their respective water supply systems in a coordinated manner so as to provide the optimal utilization of all available water supply facilities for the benefit of the inhabitants of the Washington Metropolitan Area.

ARTICLE 2. - The Authority and the Commission agree to operate their non-Potomac water supplies (Occoquan River and Patuxent River) so as to maximize the availability of reservoir storage associated therewith for use during periods of low flows in the Potomac River.

ARTICLE 3. - The District, the Authority, and the Commission agree that, notwithstanding the extent to which they each may participate in the cost of construction, operation and maintenance of Bloomington Lake, and the proposed Little Seneca Lake and in the operation and maintenance costs of the Savage Reservoir, releases of water from Bloomington Lake water supply storage and Little Seneca Lake shall be made as provided by this agreement.

ARTICLE 4. - The suppliers agree that all available water supply facilities shall be managed and operated as provided in the attached Drought-Related Operations Manual for the Washington Metropolitan Area Water Suppliers (hereinafter called the "Operations Manual"), which manual is hereby made part of this agreement.

ARTICLE 5a. - CO-OP agrees to provide the administrative, technical, supervisory and managerial services set forth in the attached Operations Manual and the District, the Authority, and the Commission agree to pay the costs thereof in the following proportions: District-30%, Authority-20% and Commission-50%.

ARTICLE 5b. - The District shall take all necessary actions to procure the required appropriations to meet its cost sharing obligations hereunder; provided, however, that no payments shall be made by the District until appropriations for such purposes have been made pursuant to the requirements of the Budget and Accounting (Anti-Deficiency) Act of 1921 (31 U.S.C. 665) as amended.

ARTICLE 6. - The parties agree that the services to be provided by CO-OP may be terminated at any time either by the unanimous agreement of the District, the Authority and the Commission or by CO-OP, in which event CO-OP shall deliver to the suppliers all computer hardware and software, equipment, supplies, records, etc., which may have been acquired or developed at the expense of the District, the Authority, and the Commission and thereupon the suppliers shall make appropriate arrangements for continuing the functions, duties and responsibilities theretofore performed by CO-OP. The District, the Authority, and the Commission agree to pay necessary termination expenses incurred by CO-OP.

ARTICLE 7. - The suppliers do hereby establish an Operations Committee which shall comprise a representative of each supplier. The Committee shall be responsible for overseeing implementation of this agreement and the Operations Manual and shall be empowered, upon unanimous agreement, to revise the Operations Manual as circumstances may require. The Operations Committee shall:

(a) as necessary, review decisions of the Director of CO-OP and by unaminous agreement, change such decisions and so inform the Director of CO-OP,

(b) monitor compliance with the terms of this agreement and the Operations Manual,

(c) provide executive support to the Director of CO-OP within their agencies,

(d) approve expenditures of CO-OP relevant to the terms of this agreement,

(e) establish joint and coordinated operating procedures for use by the suppliers to monitor supply (including rainfall forecasts) and demand during emergencies and droughts, and

(f) establish CO-OP as the agency responsible for executing the procedures in 7(e) above and for the establishment and maintenance of a system for monitoring supply and demand and performing drought management analysis.

ARTICLE 8. - The consideration for this agreement is the promises herein exchanged based upon the premises above mentioned and the public and governmental interests deemed necessary and desirable by the parties to this agreement.

ARTICLE 9. - It is agreed that the waters released from Bloomington Lake water supply storage and Little Seneca Lake are to be utilized to achieve the objectives of this agreement without regard to any cost-sharing by the District, the Authority, and the Commission in Bloomington Reservoir and Little Seneca Lake.

ARTICLE 10. - In April 1990 and in April of each fifth year thereafter during such time as this agreement is in effect and the proposed Little Seneca Lake has been constructed and is operational, the Aqueduct, the Authority, the Commission and the District shall review and evaluate the adequacy of the then available water supplies to meet the water demands in the Washington Metropolitan Area which may then be expected to occur during the succeeding twenty year period. If as a result of any such review and evaluation it is determined that additional water supplies will be required to meet the expected demands, the Aqueduct, the Authority, the Commission and the District shall undertake negotiations to provide the required additional water supplies and, when provided, water from such additional water supplies shall be included as water subject to the allocation formula under the terms of the Potomac River Low Flow Allocation Agreement. Such facilities shall be operated under the terms of this agreement. The District, the Authority, and the Commission agree that the costs of construction, operation and maintenance of such additional water supplies shall be shared among these parties in accordance with the following formulae:

$$\text{District's Share } -\% = \frac{(A-B)}{(A-B) + (C-D) + (E-F)} \times 100$$

$$\text{Authority's Share } -\% = \frac{(C-D)}{(A-B) + (C-D) + (E-F)} \times 100$$

$$\text{Commission's Share } -\% = \frac{(E-F)}{(A-B) + (C-D) + (E-F)} \times 100$$

Where:

A = The average number of gallons of processed water pumped daily by the Aqueduct to all its customers from all sources (expressed in million gallons per day) during the month of July in each of the five (5) years immediately preceding the award of a contract(s) for the construction of the additional water supply facilities.

B = The average number of gallons of processed water pumped daily by the Aqueduct to all its customers from all sources (expressed in million gallons per day) during the month of July in each of the years 1981 through 1985.

C = Same as A, except substitute the number of gallons of processed water pumped daily by the Authority.

D = Same as B, except substitute the number of gallons of processed water pumped daily by the Authority.

E = Same as A, except substitute the number of gallons of processed water pumped daily by the Commission.

F = Same as B, except substitute the number of gallons of processed water pumped daily by the Commission.

Whenever application of the above formulae results in a negative amount for any one of these parties, such party's share of the costs shall be zero. Thereupon, the formulae applicable to the other two parties shall be revised by eliminating therefrom the term which relates to the party with zero cost share (e.g., if the District's share is zero, the term (A-B) shall be eliminated; if the Authority's share is zero, the term (C-D) shall be eliminated; and if the Commission's share is zero, the term (E-F) shall be eliminated) and the revised formulae shall be applied to determine the respective shares of costs to be borne by the other two parties. Whenever application of the above formulae results in negative amounts for any two of these parties, their respective shares of the costs shall be zero and the entire costs shall be borne by the third party.

ARTICLE 11. - The suppliers, the District and CO-OP agree to utilize their best efforts to resolve any disputes which arise under this agreement or the Operations Manual by informal negotiation, the resolution of which shall require unanimous agreement of the suppliers, and the District. However, any party may initiate litigation, the purpose of which is to construe a provision of or resolve a dispute that arises under this agreement or the Operations Manual. The parties to this agreement hereby agree the issues to be litigated may be litigated in any court of competent jurisdiction sitting in Maryland, Virginia, or the District of Columbia and consent to venue in any such court and to the service of all papers and pleadings related thereto. Pending final resolution of any dispute, the provisions of this agreement and the Operations Manual shall continue in effect.

ARTICLE 12. - The effective date of this agreement shall be the date on which the last party executes the same.

ARTICLE 13. - Unless sooner terminated by unanimous agreement of the suppliers, and the District, this agreement shall continue in effect for as long as the water systems of the suppliers remain in existence and operation.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed as of the date which appears with their respective signatures.

Approved in form and in legal sufficiency:	UNITED STATES OF AMERICA
____________________	By:____________________ District Engineer, Baltimore District, Corps of Engineers, U.S. Army
Date:________________	Date:____________________
	FAIRFAX COUNTY WATER AUTHORITY
____________________	By:____________________ Chairman
Date:________________	Date:____________________
	WASHINGTON SUBURBAN SANITARY COMMISSON
____________________	By:____________________ General Manager
Date:________________	Date:____________________
	THE DISTRICT OF COLUMBIA
____________________	By:____________________ Mayor
Date:________________	Date:____________________
	INTERSTATE COMMISSION ON THE POTOMAC RIVER BASIN SECTION FOR COOPERATIVE WATER SUPPLY OPERATIONS ON THE POTOMAC
____________________	By:____________________
Date:________________	Date:____________________

I, Henry P. Stetina, of Bethesda, Maryland, General Counsel to the Interstate Commission on the Potomac River Basin make oath and say that I, in the presence of the Executive Director, affixed the Common Seal of the Commission to the annexed Water Supply Coordination Agreement dated ______________________, A.D., 1962, and that I saw the Chairman of CO-OP sign, execute and deliver said Contract as and for the act and deed of the CO-OP Section of the Commission and that I countersigned the said Contract to complete the due execution thereof. And further that the seal affixed and impressed at the foot or end of the said Contract is the Common Seal of the Commission and was affixed and impressed thereto by myself by a resolution adopted on the 29th day, of June A.D., 1982 and with the authority of the Commissioners of CO-OP and in conformity with procedures required for the authentication of the Contract.

Henry P. Stetina
General Counsel

Paul W. Eastman
Executive Director
(Witness)

Drought-Related Operations Manual for the Washington Metropolitan Area Water Suppliers

(Attachment to Water Supply Coordination Agreement,
dated _______________, 1982)

I. Introduction

This manual details operations rules and procedures for reducing the impacts of severe droughts in the Potomac River Basin. Although the primary emphasis is on water supply for the Washington Metropolitan Area, the rules and procedures are consistent with maintaining instream flow and water quality in both upstream and downstream portions of the basin.

II. Objectives

A. Make the most efficient use of all water supply facilities, including but not limited to the Potomac River, Bloomington Lake, Occoquan Reservoir, Triadelphia Reservoir, Duckett Reservoir, and the proposed Little Seneca Lake to meet all water supply needs for the Washington Metropolitan Area.

B. Maintain the probability of invoking the Restriction Stage of the Potomac River Low Flow Allocation Agreement at less than 5 percent during a repeat of the historical streamflow record.

C. Maintain the probability of entering the Emergency Stage of the Potomac River Low Flow Allocation Agreement at less than 2 percent with full reservoirs on June 1 of any year.

D. Maintain the probability of not refilling any reservoir used for Washington Metropolitan Area water supply to 90 percent of useable capacity by the following June 1 at less 5 percent during a repeat of the historical streamflow record.

E. Maintain flows in the Potomac River below Seneca Pool as agreed to by the signatories to the Potomac River Low Flow Allocation Agreement.

F. Minimize conflict between normal utility operations and drought operations.

G. Provide consistency with the requirements of the Potomac River Low Flow Allocation Agreement.

III. Facilities and Operations Directly Affected.

A. Potomac River facilities of the Washington Aqueduct Division, U.S. Army Corps of Engineers, Washington Suburban Sanitary Commission, and the Fairfax County Water Authority.

B. Washington Suburban Sanitary Commission water supply facilities on the Patuxent River.

C. Fairfax County Water Authority water supply and power generating facilities on the Occoquan River.

D. Finished water interconnections between the Fairfax County Water Authority and the Washington Aqueduct Division, U.S. Army Corps of Engineers supplied water utilities in Virginia, subject to the approval of Arlington County and/or the City of Falls Church.

E. Water supply releases from the proposed Little Seneca Lake.

F. Water supply releases from water supply storage in Bloomington Lake.

IV. Implementation

A. Whenever gauged flows at Point of Rocks are below 2000 cfs, CO-OP will compute flows in the Potomac River at Little Falls Dam, including all prior water supply withdrawals for the Washington Metropolitan Area on a daily basis.

B. CO-OP will issue long-range water supply outlooks on a monthly basis from May through October. Additional outlooks will be issued as needed. These outlooks will contain estimates of the probability of meeting long-range unrestricted demands from current storage, and then refilling every reservoir to at least 90 percent of useable capacity by the following June 1.

When computing probabilities, CO-OP shall consider gross storage in all local reservoirs, less the following allowances for unuseable storage:
a) Occoquan - 1 billion gallons; b) Patuxent (Triadelphia plus Duckett) - 2 billion gallons; and c) Little Seneca Lake - .5 billion gallons.

C. The rules set forth in Section V. shall take effect when one or both of the following conditions exist.

(1) The probability of meeting all unrestricted demands and refilling all reservoirs to 90 percent of useable capacity by the following June 1 is less than 98 percent.

(2) Flow in the Potomac as computed in IV-A above, less the amount required for flow-by over Little Falls Dam is projected to be less than twice the projected withdrawals for any of the next five days.

V. Operating Rules

A. During such time as the rules are in effect (per IV-C above) each supplier shall report daily to CO-OP, no later than 8:30 A.M., its 24 hour demand ending at 6:00 A.M. on that day.

B. During such times as these rules are in effect, the Director of CO-OP shall, following the objectives outlined in II above, and using techniques approved by the Operations Committee:

(1) Consult with the suppliers and the U.S. Army Corps of Engineers as required and direct the appropriate releases from water supply storage in Bloomington Lake and Little Seneca Lake.

(2) Prior to 10:00 A.M. daily set withdrawal rates from the Potomac for the Authority and the Commission for the 24 hour period beginning at 6:00 A.M. on that day.

C. As early as practicable during each day, the Director of CO-OP shall revise the Authority's and the Commission's Potomac withdrawal rates in light of actual river flow and water demands.

D. Whenever the Aqueduct declares the Restriction or Emergency Stage of the Potomac River Low Flow Allocation Agreement to be in effect, the allocation provisions of the Potomac River Low Flow Allocation Agreement shall determine Potomac withdrawals.

E. During such times as these rules are in effect power generation at the Occoquan River shall cease.

F. Should the probablity of meeting unrestricted demand with existing storage fall below 95 percent, each supplier agrees to so advise the governing bodies of the jurisdictions which they serve and to recommend restrictions on water use.

G. Raw water released from Lake Manassas and reimpounded in the Occoquan Reservoir shall be treated as Occoquan storage under these rules.

VI. Review by Operations Committee

A. The Operations Committee shall be responsible for overseeing the administration and implementation of this manual and, by unanimous agreement, shall be empowered to overrule or modify any action taken, or proposed to be taken, hereunder by the Director of CO-OP.

7503 Dover Lane
Lanham, Maryland 20706
March 11, 1983

Senator Charles McC. Mathias, Jr. (R-Md.)
United States Senate
Washington, D. C. 20510

Dear Senator Mathias:

I was delighted to read in yesterday's Washington Post that the Senate Governmental Affairs subcommittee which you chair plans to hold hearings next week on emergency preparedness in the Washington region. The story points out that in particular, you will be looking into the Blizzard of '83 snowstorm fiasco of February 11, 1983.

Attached for your information is an article printed in the February 16, 1983 Prince George's Journal, which I wrote, recounting the horrid experience of thirty of your constituents, not only stranded but abandoned at the Metro Station in Cheverly, Maryland on that day. Having been one of those passengers, I attribute our abandonment to the callous disregard by Metrorail management for our health, safety, and well being.

As a direct result of our long exposure to the weather elements that day, occasioned by Metro's reckless disregard of our safety, within two days I came down with pneumonia, as diagnosed by my personal physician. For struggling to work on February 11, and as a result of the pneumonia, it cost me almost two weeks of sick leave, a large doctor bill, and a hotel bill for the night of February 11 after we were rescued from the Metro station and taken to the Howard Johnson's motel in Cheverly where we had no alternative other than to spend the night there.

Metro is not solely to blame. I think the Office of Personnel Management blundered with its stupid decision to call in federal workers to work that day, only to send them home a few hours later. Knowing what I know now, after what I experienced and what it cost me in terms of personal health and out-of-pocket expenses, I should never have come to work that day under those circumstances. I am certain that under future similar circumstances, I will not take any similar risks to my health, and will stay home instead, despite any ill-advised recommendations or directives from the unthinking OPM.

I hope you will make reference at this hearing to this unbelievable incident experienced by many of your constituents, and will insert the attached P.G. Journal article as a part of your hearing record. I hope you will also let both OPM and Metro know that they have some very angry and totally dissatisfied Maryland citizens who rightfully deserve reconsideration and a proper response.

Sincerely,

James E. Merna

James E. Merna

A8 — *Prince George's Journal,* Wednesday, February 16, 1983

REMEMBRANCE: STRANDED AT THE STATION

Many County residents have a tale to tell about the Great (Almost) Blizzard of 1983. James E. Merna, of Lanham, a public affairs officer for the Department of Energy, wrote this — and we would like to share this first-hand account of an adventure he calls, "A Harrowing Experience in Cheverly."

The blizzard of '83 will long be remembered by some 30 stranded Metrorail passengers at the Cheverly station last Friday. It was a harrowing experience for all of us — shivering, wet, exhausted, and a bit bewildered after more than five hours in the Metrorail system. It would be a minimum of 24 hours before most of us would get home, from the time we started for work Friday morning.

There were some in our group who felt that it wasn't only vehicles that were abandoned that day in the heavy snow storm. Many felt that they themselves had been abandoned — by Metro — to fend as best they could for themselves. I'll explain why.

After struggling to get to work Friday morning, many federal workers, myself included, arrived on a delayed basis only to find that the Office of Personnel Management had reconsidered its earlier decision and had decided to allow federal employees to go home early on a staggered basis. By the time I arrived at my office, one of my colleagues who had made it in earlier had already gone home.

I managed to squeeze in a few hours of work until I heard the news that Metrorail was going to shut down real soon. I decided I'd better get going before there wasn't any way to get home at all. I boarded the subway at the Smithsonian Station about 2 p.m. and took the Orange Line headed for New Carrollton. My home in Lanham is only about four miles from the New Carrollton station.

The ride home seemed interminable. Through no fault of Metro, it was stop and go all the way. The heavy snows had brought private transportation to a standstill, and the Metrorail was no exception. We managed to get as far as Deanwood, and then were ordered off the train. After another long wait at the freezing platform with strong winds blowing heavy gusts of snow, another train came along and we took it as far as Cheverly, when we were once again ordered to get off the train. Little did we know then that this was the end of the line of us.

By this time in late afternoon, the above-ground segments of Metro rail lines were overwhelmed by the heavy snow and ice, and the system began to close. From the moment we arrived at Cheverly, Metrorail's station attendant there, Jim Reid of Hyattsville, did all that he personally could to comfort the stranded passengers and to seek alternate transportation arrangements. Unfortunately, none was to be had. Mr. Reid's superiors informed him that the Cheverly station had to be shut down by 8 p.m.

A number of people in our group really began to get worried at this point. We had some young mothers with us who were concerned for their children at home. We had a young Spanish-speaking fellow who couldn't speak a word of English, and we had an inebriated older man who drifted away from our group and was later found on the station platform lying in the freezing snow. He was rescued by members of our group and comforted, although he refused emergency medical treatment.

At this point, we needed help and the only word we kept getting was Mr. Reid's superiors telling him that the station had to be closed — and that the station had to be emptied of all passengers. Mr. Reid tried to meet human needs first. He worked the telephone furiously, seeking whatever help he could. But none was to be had.

I then suggested that we make a call to the Mayor of Cheverly. The Mayor, Bob O'Connor, is an old friend of mine from Marine Corps circles. Mayor O'Connor immediately recognized our plight, got on his radio phone and dispatched his town's vehicles, which were in the midst of plowing the snow-clogged streets of Cheverly, to our rescue.

What a pleasant sight to behold when Cheverly's Road Maintenance Chief, Jim Butler, rolled up to the Cheverly Metro Station about 7 p.m. with his caravan of snow plows and emergency vehicles. It reminded me somewhat of my younger days as a Marine during the Korean War, when our combat caravans used to move out silently at night under the cover of darkness.

I insisted that the women in our group be evacuated first, which Jim Butler and his men saw to very attentively. He returned a second time with his crew and evacuated the rest of us. We were all taken to the Howard Johnson Motor Lodge in Cheverly, which Mayor O'Connor had thoughtfully called in advance. The staff there couldn't have been more sympathetic. The restaurant manager, Mr. Fry, short of help because of the snowstorm, nonetheless kept the restaurant open longer to provide some welcomed hot coffee and food to a weary bunch.

Since further travel was virtually impossible due to the ever increasing snowfall, which by now was almost two feet deep, we had no alternative except to spend the night at the Howard Johnson's. The next morning, after bidding farewell to some of our fellow stranded Metrorail passengers, a few of us decided to set out on foot to the Baltimore-Washington Parkway. There, we encountered other pedestrians similarly hiking for various reasons (most likely after abandoning their cars unable to make it in the heavy snow). I managed to get a ride to the Riverdale Road exit and then trudged through the snow the remaining two miles to my home. I arrived home just about the same time as my wife, a registered nurse, who had just completed 24 hours on duty, working a triple shift for other nurses who were unable to make it to work at a nursing home in Greenbelt.

I want to make one observation as a result of this experience. Metro Transit performed miraculously in many respects throughout this almost unprecedented situation. The experts all agree that this was indeed one of the largest snowstorms of the century in the Washington area. Notwithstanding, I suggest Metrorail might want to reevaluate its emergency preparedness procedures in light of problems of the type we encountered as a result of the Blizzard of '83.

Metro made such a reevaluation last year following the tragedy of January 14, 1982 when three passengers were killed in a Metroliner collision in a tunnel near the Smithsonian Station. (Ironically, I was waiting to board that very same train that day, and one of the passengers killed, Mary O'Meara, was a parishioner at my church, St. Mary's, in Landover Hills).

At the same time that we were stranded in Cheverly, newspaper accounts point out that air travelers were stranded at Washington National Airport, BWI and Dulles Airport. And they were all forced, like Metrorail, to close down operations. But unlike Metrorail, the air terminals did not attempt to force their passengers out of the terminals to fend for themselves.

If I learned one lesson from this experience, using a slight adaptation of a popular advertisement, I would advise Metrorail passengers, "Don't leave Metro without your American Express card." You may find you will need it as much as your Fare Card. You may need it, as I did, for an unexpected overnight stay at your local Howard Johnson's.

James E. Merna
Lanham

OVERVIEW OF FEBRUARY 11-16, 1983
SNOW EMERGENCY

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Department of Transit Operations
February 16, 1983

CHRONOLOGY OF KEY EVENTS

DATE	PROBLEM	ACTION
Thursday, Feb. 10	• Weather forecast of approaching storm	• Rail Snow Emergency Plan activities started at 12noon. • General maintenance snow plan activated at 3PM and staging of equipment and materials was initiated. • Bus divisions began preparing sand and salt trucks for operation and putting sand bags in buses.
	• Snowfall started between 8 and 11PM.	• System Maintenance initiated snow plan and activated snow melters. • Rail Transportation Snow Emergency Level II Plan initiated. Polishing trains started following close of revenue service.
Friday, Feb. 11	• Snowfall accumulation 2 inches by 5AM. Federal employees told to report to work under liberal leave policy.	• General Maintenance crews dispatched at 4AM to plow bus bays, access roads, parking lots, station entrances, and to shovel station platforms and entrances. Approximately 200 personnel dispatched, and worked until 8PM Friday. • Normal bus and rail rush hour service commenced.
	• Snow accumulation reaches 4-7 inches by 7AM, buses started to get stuck on side streets and secondary roads.	• Tow and service trucks dispatched from each division to retrieve stranded buses. • AM bus and train operators held over.
	• Snow accumulation of 7 inches reported at National Airport at 10AM, total accumulation of 12 to 18 inches predicted by evening.	• At 10AM Metro informed OPM of anticipated difficulties and requested early dismissal. • Metrorail resumed rush hour service at 10AM to keep track clear and carry increased number of riders.

DATE	PROBLEM	ACTION
Friday(Cont)	• At 10:45 AM OPM announces staggered release of employees between 11AM to 1PM.	• Articulated buses called in at 10AM.
	• Snowfall accumulation reaches 8-11 inches by 1PM, temperature dropped to 21 degrees. Many AM buses still stranded, particularly in suburban areas.	• All available buses put into PM service, but service was restricted due to shortage of personnel and equipment since many buses were stuck on the street with their operators. • Unlimited bus maintenance overtime authorized to tow and repair buses. A total of 210 buses were stranded on Friday. • Service at Arlington Cemetary curtailed at 1:20PM and station bypassed.
	• Snowfall accumulation reaches 12 to 15 inches by 4PM, causing trains to lose contact with 3rd rail on some above ground areas. Track conditions deteriorate:	
	- train stalled at Takoma	- Service curtailed from Union Station to Silver Spring at 4PM. Passengers evacuated to rescue train and returned to Union Station. Buses dispatched to transport passengers.
	- train stalled at Cheverly	- Service curtailed between Stadium/Armory and New Carrollton at 4PM. Passengers returned to station.
	- train stalled at Arlington Cemetary	- National Airport service curtailed at 6PM. Passengers evacuated to track bed and waiting buses after rescue train failed.

DATE	PROBLEM	ACTION
Friday (Cont)	• Snowfall accumulation reaches a total of 17 to 23 inches.	• General Maintenance begins towing crippled trains and plowing above ground track areas at 5:30PM. One locomative used for towing. One locomotive and 3 Pettibones used for plowing.
		• All bus divisions notified to dispatch no additional trips at 6PM and all buses told to return to divisions. However many were unable to return since they were stuck in snow and traffic. Some returns to division not made for 30 hours.
		• Curtailment of rail service scheduled for 8PM and announced at 4PM. Announcement of no Saturday service made at 8PM.
	• Rail service curtailed at 8PM	• Stations left open until passengers were provided for. Some passengers transported with employees in 4 wheel drive vehicles.
	• 4 trains stranded on above ground track areas.	• Trains stored underground overnight. Towing of stranded trains continues.
	• 120 buses stranded at 11PM with very poor road conditions.	• Tow trucks continued operation, contract tow trucks sought but unavailable.
		• Street Supervisors begin to assess road conditions for possible AM service.
Saturday, Feb. 12	• Extent of third rail icing problem confirmed at 1AM for entire above ground areas.	• Track crews dispatched to deice 3rd rail with ethyl glycol and hand scraping.

DATE	PROBLEM	ACTION
Saturday (Cont)	• Saturday bus service due out at 5AM with poor road conditions and full plowing operations in effect.	• 30-40 buses dispatched based upon assessment of road conditions. No Virginia service put out. Buses called in at 9AM due to road conditions. At this time 15 buses were already stuck in the snow.
		• Track crews and transportation continue to plow track and deice third rail: - Blue/Orange line plowing and deicing completed by 5PM Saturday to National Airport. - Brentwood Yard plowing completed by Saturday night.
		• General Maintenance crews continue to plow and shovel rail stations, bus loops, terminals.
	• Street plowing continues and requests for service accelerate.	• Street supervisors reassess route conditions and identify 9 routes in D.C. for service between 2-8PM. DC Snow Center notified and concurred with plan. Service resumption announced to media at 12noon. Forty five buses put into service. Ridership was heaviest on Benning Rd., Wisconsin and Pennsylvania Ave.
		• Towing of stranded buses continues through Saturday night. Buses stranded on Friday night as well as Saturday continued to add to total requiring towing.
	• Need to plan Sunday service	• Rail and Bus service assess service possibilities.
		• DST performed on rail cars at Ballston and National Airport.

DATE	PROBLEM	ACTION
Saturday (Cont)		• Operators and Station Attendants told to report 2 hours early.
	• Melted snow refreezes on 3rd rail	• Rail plowing and deicing continue all night.
Sunday, Feb. 15	• Regular Sunday bus service due out at 5AM	• Normal Sunday bus service dispatched from 5 divisions, total of 146 buses on street. Sunday night owl service put out. By 8PM all buses which had been stuck had been retrieved.
	• Regular Sunday rail service due out at 10am	• Rail Service opens at 10:30am: - Eastern Market to National Airport and Ballston (except Arlington Cemetary) - Judiciary Square and Van Ness
		• Track crews continue plowing and deicing activities: - Red Line plowing to Silver Spring completed - Plowing completed to Addison Rd. - New Carrollton yard plowing completed - Deicing started between Stadium/Armory and Addison Rd., and Union Station and Rhode Island Ave. Deicing completed Sunday night.
	• Need to plan Monday service levels	• Bus Street supervisors and management personnel meet at 1:30pm to establish plan for assessing service capability. Bus service also begins assessing equipment condition and calling extra personnel to report for work on Monday.
		• Limited rail service planned for Monday, bus augmentation arranged. Press briefing held at 9PM
Monday, Feb. 14	• AM bus service due out at 5am and rail service at 6am.	• Bus Street supervisors check route conditions at 4AM to determine service possible in AM rush. Route changes announced at 5:45 to media.

DATE	PROBLEM	ACTION
Monday (Cont)		• 1463 buses dispatched. Service not provided on 7 routes and 81 routes are modified based on road conditions.
		• Rail service opens at 6AM at reduced levels: - Van Ness to Rhode Island Ave. - Addison Rd. to National Airport and Ballston. No service between Statium/Armory and New Carrollton. - Thru bus service provided from New Carrollton and 18 trips added from Silver Spring to downtown for AM trip and return PM trip.
	• Work priorities needed because above ground segments of 3rd rail still covered with ice.	• Action Plan established for day. First priority protecting existing service. Second priority opening New Carrollton in PM. Third priority opening Silver Spring.
		• Track crews continue to deice 3rd rail. Thirty temporary employees hired to augment track crews.
		• Revenue service to New Carrollton opened at 12noon.
		• Revenue service to Silver Spring opened at 3:30PM.
	• Street conditions continue to improve. D.C. salt trucks called in at 4PM.	• Bus Street supervisors monitor road conditions and improve service levels based on conditions. By PM rush service not provided on 1 route and 69 routes modified. 1453 pm buses dispatched.

DATE	PROBLEM	ACTION
Tuesday, Feb. 15	• AM bus service due out at 5am and rail service at 6am.	• AM bus service opened on all routes. Service changes required on 54 routes due to road conditions. Many bus delays due to lifting of HOV restrictions.
		• Full rail service provided.
		• Track crews continue to work south of National Airport. Alexandria Yard opened at 2PM.
		• Full PM bus service provided. Route changes made on 45 routes based on road conditions.
Wednesday, Feb. 16		• AM bus service provided on all routes. Service changes made on 18 routes.
		• All routes in normal operation at 3PM.

SUMMARY OF ACTIONS TAKEN IN 1979 TO ACCOMMODATE SEVERE WEATHER CONDITIONS

Following the severe snowstorm of February 18-19, 1979, the WMATA Board directed staff to develop a plan of action to accommodate severe weather conditions. On June 21, 1979, staff provided the Board an advance copy of the requested plan, which was referred to the jurisdictions for comment. A final proposal was brought before the Board on July 26, 1979. It recommended purchase of equipment required in addition to material already on hand to counter a snowstorm of ten to twelve inches in a twenty-four hour period. Meteorological data indicated that this level of snowfall occurred on the average of once every six years. The list of needed equipment (see attached) was compiled on the basis of that portion of the system then in operation or under construction. The staff report noted that, as the system expanded, requirements would increase accordingly. The estimated cost of this additional equipment was $970,000. By unanimous vote, the staff recommendation was approved by the Board.

All of the equipment recommended was subsequently procured and was available for use in countering the effects of the snowstorm experienced on Friday, February 11, 1983.

Last Friday's storm was of a magnitude considerably greater than the ten to twelve inches in twenty-four hours contemplated in the 1979 staff recommendation. It resulted in accumulations of nearly twenty-four inches in parts of the metropolitan area, though the official tabulation was just under eighteen inches. On the average, a storm of this severity occurs twice each century. The cost of adequate snow removal equipment for these conditions would be far in excess of the $970,000 authorized in 1979. Staff is, however, assessing what additional equipment would be needed to counter storms of increased severity, if the Board determines it necessary that we raise our level of preparedness. In any event, additional equipment must be procured as new rail segments come into revenue service, especially the long surface level routes to Shady Grove and Huntington. An assessment is also being made of staffing requirements for adverse weather situations. The round-the-clock demands experienced in the aftermath of Friday's storm took a great toll from our operations and maintenance personnel. While their performance was extraordinary, we are continuing to evaluate staffing alternatives.

As the 1979 staff report indicated, it is impossible to guarantee that any series of actions will assure uninterrupted revenue service under any circumstances. However, it is important that the Authority be reasonably well prepared to maintain service in severe weather conditions, and be able to recover as rapidly as possible in the event service must be discontinued. Staff will report to the Board in more detail when our evaluations of the events of February 11 and following days are complete.

BOARD APPROVED EQUIPMENT TO MEET REQUIREMENT OF A
TWELVE-INCH SNOW FALL WITHIN A TWENTY-FOUR HOUR PERIOD

Office	Quantity	Description	Cost
General Maintenance-Track and Structures Branch			
	1	Snowblower for old Kal Trac	$ 25,000
	2	Snowplows for 2 locomotives	30,000
	1	Tank truck	65,000
	1	New Kal Trac/with snowblower	120,000
	2	Plows for 2 Kal Tracs	17,000
	1	Snowblower for tamper	35,000
	1	Plow for Kal Tracs	8,000
	1	Speed Swing with blade	100,000
		Sub-total	$ 400,000
General Maintenance-Building/Support Equipment Maintenance Branch			
	2	Dump trucks with plows, spreader	$ 110,000
	1	Front end loader with snowplow	30,000
	1	Grader	23,000
	1	Dump truck with plow	55,000
	1	Front loader	30,000
	1	Tractor with blade	38,000
	1	Dump truck with blade	55,000
		Sub-total	$ 341,000
General Maintenance-Custodial Services Branch			
	2	16 hp tractor with blade	$ 5,100
	1	1600 tractor with blade, spreader	5,700
	4	Blades for 1-ton pick-ups	3,700
	2	1-ton 4-wheel drive pick-ups, blades	20,000
	1	Spreader for 1600 tractor	500
	5	Snowblowers	3,500
	10	Wet & dry pick-up vacuums	10,000
	2	1-ton pick-up with blades	16,000
	1	Front loader with trailer	44,000
	1	4-wheel drive pick-up with blades	10,000
	1	Medium-size 4-wheel drive pick-up truck with plows	10,000
		Sub-total	$ 128,500
		General Maintenance Sub-total	$ 869,500
Bus Services			
	2	Medium size 4-wheel drive tractor, plows	$ 22,000
	3	Blades for wreckers	6,000
	1	Medium size 4-wheel drive tractor, plow	11,000
		Bus Services Sub-total	$ 39,000

Rail Services

4	4-wheel drive vans, personnel	$ 31,200
4	4-wheel drive vans	31,200
	Rail Services Subtotal	$ 62,400
	TOTAL	$ 970,900

KEY PROBLEMS WITH EQUIPMENT, FACILITIES AND PROCEDURES

- Ability of buses to safely manuever in snow
- Third Rail Icing
  - cover board
  - collector shoe
  - Deicing equipment
- Adequacy of snow removal equipment of:
  - rail right of way
  - parking lots and bus loops
  - yards (DST loops)
  - garages
- Emergency response vehicles
  - tow trucks
  - 4 wheel drive vehicles
- Availability of emergency supplies
  - salt/sand
  - deicing fluid
- Authority jurisdiction and media coordination
  - early release of employees
  - transportation availability to field crews
- Radio communications

AREAS FOR FUTURE CONSIDERATION BY THE BOARD AND STAFF FOR SNOW EMERGENCIES

- Review and refinement of snow emergency plans with emphasis on:
  - vulnerable areas of existing system
  - requirements for 101-mile rail system
- Technology for deicing
- Coordination within Metropolitan Area:
  - Federal Government and Board of Trade
  - Jurisdictions' snow removal plans
  - Airports, Amtrak, Ride-On, etc.
  - Media
- Training of bus and rail operating personnel for snow emergencies
- Revenue Security - Bus and Rail
- Development of Recovery Action Plan:
  - Route prioritization - Bus and Rail
  - Safety Inspections
  - Restocking of snow emergency supplies
- Centralized Command Center in OCCB
- Increased Public Information:
  - street supervisors
  - signs and announcements

SNOW EXPERIENCE OF OTHER TRANSIT PROPERTIES

February 11 - 16, 1983

New York City had five lines taken out of service due to the twenty-two (22) inches of snow that fell Friday night. One line was closed for one day, reopening on Saturday night. Four other lines were closed from Friday until Sunday. New york experienced problems with icing and drifting snow on the third rail. They are equipped with 30-35 diesels with snow plows and utilize switch heaters and some third-rail heaters.

Philadelphia had Twenty-two (22) inches of snow and was able to maintain operations. They closed one line for approximately one hour and experienced problems in yard facilities.

PATCO encountered no major problems and continued operations throughout the weekend. They ran longer trains more frequently in order to keep tracks clear. Their equipment includes car with scraper shoes which keep the third rail open.

Boston had from twelve (12) to twenty-four (24) inches of snow which fell after the Friday rush hours were over and took one line out of service for three hours. The system is equipped with third-rail heaters on curves and inclines and all revenue trains can be equipped with plows. Boston also utilizes two jet engines for third-rail deicing.

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

WMATA
SYSTEM SAFETY PROGRAM PLAN

June 20, 1978

(Hold Page Numbers Thruout)

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

WMATA
SYSTEM SAFETY PROGRAM PLAN

June 20, 1978

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System Safety Engineer
TRSV

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Assistant General Manager
DECO

APPROVED BY: Donald M. McAmis
D. H. McAmis
Safety Officer
TRSV

APPROVED BY:
T. C. Lutz
General Manager

APPROVED BY:
N. J. Ro
Assistant General Manager
TRSV

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1.0 GENERAL

1.1 INTRODUCTION - The prime purpose of the Washington Metropolitan Area Transit Authority (WMATA) is to transport people safely and efficiently. Thus, safety is a principal concern of WMATA, and it is the responsibility of every employee to ensure the safety of passengers, employees, and others who come in contact with the METRORAIL/METROBUS System. This safety policy has been established by the Board of Directors, which has charged the General Manager with all actions required to implement this directive.

Safety must be a major consideration at every stage of all WMATA activities including planning, design, construction, operations, and maintenance of the coordinated METRORAIL/METROBUS System to ensure the highest practical level of safety for our passengers and employees. The sophistication and complexity of the WMATA Transit System necessitate integration and implementation of systematic, stringent safety requirements throughout WMATA management philosphies, policies and practices. In addition, the Congress, the federal regulatory bodies, and the local jurisdictions have demanded safety, reliability, and cost effectiveness within the WMATA System. These demands reemphasize the need for a systematic approach to safety.

This System Safety Program Plan defines the objective, the quantitative safety goals, the organization, the safety activities, and policies that have been established by WMATA to implement its Safety Program.

1.2 GUIDELINE DOCUMENTS - The Urban Mass Transportation Administration (UMTA), the National Transportation Safety Board (NTSB), the Federal Railroad Administration (FRA), and the American Public Transit Association (APTA) have stressed the safety aspects of rapid transit programs and the need for a formal system safety management approach. The following reports provide guidance and direction to implement this System Safety Program Plan; and delineate the applicable regulations that should be observed by mass transit systems:

1. "Safety and Systems Assurance Review of the Washington Metropolitan Area Transit Authority (WMATA) Rapid Rail Transit System Development Program. A Report to the WMATA General Manager", UMTA/TSC/FRA Review Team Report, March 1977.
2. "Study of Washington Metropolitan Area Transit Authority's Safety Procedures for the Proposed METRO System", NTSB-RSS-70-1, September 28, 1970.
3. "Special Study of Rapid Rail Transit Safety", NTSB-RSS-71-1, June 16, 1971.
4. "Safety Methodology in Rapid Rail Transit System", NTSB-RSS-73-1, August 8, 1973.
5. "Safety in Urban Mass Transportation: Guidelines Manual"; UMTA-RI-06-0005-75-2, May 5, 1975.
6. "Safety in Urban Mass Transportation: Research Report"; UMTA-RI-06-0005-75-3, March 31, 1976.

7. "Occupational Safety and Health Administration (OSHA) Safety and Health Standards (29CFR1910) - General Industry: OSHA 2206", July 1, 1975 (Revised January 1976).

8. "Safety Regulations Governing the Operations of Passenger Carriers", Washington Metropolitan Area Transit Commission, General Order No. 8, September 20, 1963.

1.3 SCOPE - This plan defines all formal safety activities, both technical and management, related to METRORAIL design, construction, test, and revenue operations that will be performed as the METRORAIL System develops from a 23 mile/29 station segment in revenue service to the fully operational 99.7 mile/87 station METRORAIL System. The responsible organization, the methods, procedures, and documentation for the control, direction, monitoring, and reporting of the safety activities are described herein. The safety activities related to METROBUS operations are also included.

In addition, sufficient information is included to define the activities that are performed by WMATA SURE (Security), Construction Safety, and MIA (METRO Insurance Administrators) so that a basic understanding of their charters, operations, and interfaces with the WMATA Safety Branch can be defined in relation to the System Safety Program.

1.4 OBJECTIVE - The objective of this plan is to provide an effective system safety program which will assure (1) that goals and criteria for patron and employee safety are established and implemented throughout the system; (2) that system safety hazards are identified as early as possible; and (3) that appropriate actions are taken to eliminate, minimize or control hazards to prevent injuries to passengers and employees, or damage to WMATA equipment and facilities.

1.5 FEATURES - WMATA has adopted a closed loop System Safety Program consisting of designed-in-safety, safety analyses, feedback for test and operations evaluation, safety training, and safety inspections. The techniques to accomplish the closed loop program include qualitative system safety analyses, safety design reviews on all equipment to be procured in the future, quantitative safety goals, evaluation of system operational performance against the safety goals, correction of safety problems, safety training, and continuous safety inspections and evaluation.

1.6 SAFETY GOALS - The WMATA system safety goal is to research, plan, design, construct, test, and operate a public transportation system that attains the optimum level of safety which meets other important system requirements (reliability, availability, dependability, cost, and service level). The operational safety goal is the elimination or control of those identified hazards that could result in the injury or death of passengers or employees or destruction of system property, and the reduction of accident rates so that WMATA safety performance compares favorably with that of similar systems.

1.6.1 QUANTITIVE METRORAIL SAFETY GOALS - In order to verify attainment of safety goals, they must be quantified. Three general categories are defined by the American Public Transit Association (APTA) to quantify accident rates in the rapid transit industry:

(A) Traffic Accidents per 1,000,000 Miles Operated.
(B) Passenger Accidents per 1,000,000 Passengers Carried.
(C) Station Accidents per 1,000,000 Passengers Carried.

METRORAIL goals for 1977 and 1978 have been set at (A) 1.5; (B) 3.0; and (C) 12.00 in these categories. An additional goal is that the existing records of (1) zero fatal passenger or employee accidents and (2) zero passenger or employee injuries from traffic accidents that have been achieved since the inception of METRORAIL service in March of 1976, be extended through 1977 and 1978.

1.6.2 QUANTITIVE METROBUS SAFETY GOALS - Two general categories are defined by APTA to quantify accident rates in the mass transit bus industry:

(A) Traffic Accidents per 1,000,000 Vehicle Miles.
(B) Passenger Accidents per 1,000,000 Passengers.

METROBUS goals for 1977 - 1978 have been set at (A) 65.00 Traffic Accidents per 1,000,000 Vehicle Miles, and (B) 6.5 Passenger Accidents per 1,000,000 Passengers.

2.0 SYSTEM DESCRIPTION

2.1 HISTORY - The METRO System was conceived as a safe, secure, reliable rapid transit system for the Metropolitan Area of of Washington, D. C. that would relieve traffic congestion and improve the physical character, economic well-being and environment of our National Capital Area. A major event in the history of the System occurred in 1959 when a Congressionally authorized Mass Transportation Study recommended the introduction of a rapid rail system into the area. This led, in 1960, to the creation by Congress of the National Capital Transit Agency (NCTA) to begin planning for the rapid rail system.

In 1967, NCTA was replaced, as Congress had intended, by the Washington Metropolitan Area Transit Authority (WMATA). WMATA is a public authority, responsible to and representative of, the District of Columbia, and the Northern Virginia and Maryland suburban jurisdictions. WMATA was chartered to design, build and operate the METRO System. On December 9, 1969, ground was broken at Judiciary Square and construction began on the METRORAIL System. In 1973, WMATA acquired four privately owned area bus lines (D. C. Transit, WV&M Coach, AB&W Transit, and WMA Transit), so that coordinated METRORAIL/METROBUS service could be provided for the Capital Area. On March 29, 1976, Revenue Service began on the METRORAIL Phase I Segment between the Rhode Island and Farragut North Stations. This was followed by the opening of Phase IA (Dupont Circle) on February 1, 1977; the opening of Phase II (Stadium Armory to National Airport) on July 1, 1977; and the opening of Phase IIA (Rhode Island Avenue to Silver Spring) on February 6, 1978. The remaining segments of the full 99.7 mile/87 Station System are in various stages of design, construction, or study. Figure I is the Design and Construction Schedule for completion of the Rapid Rail System.

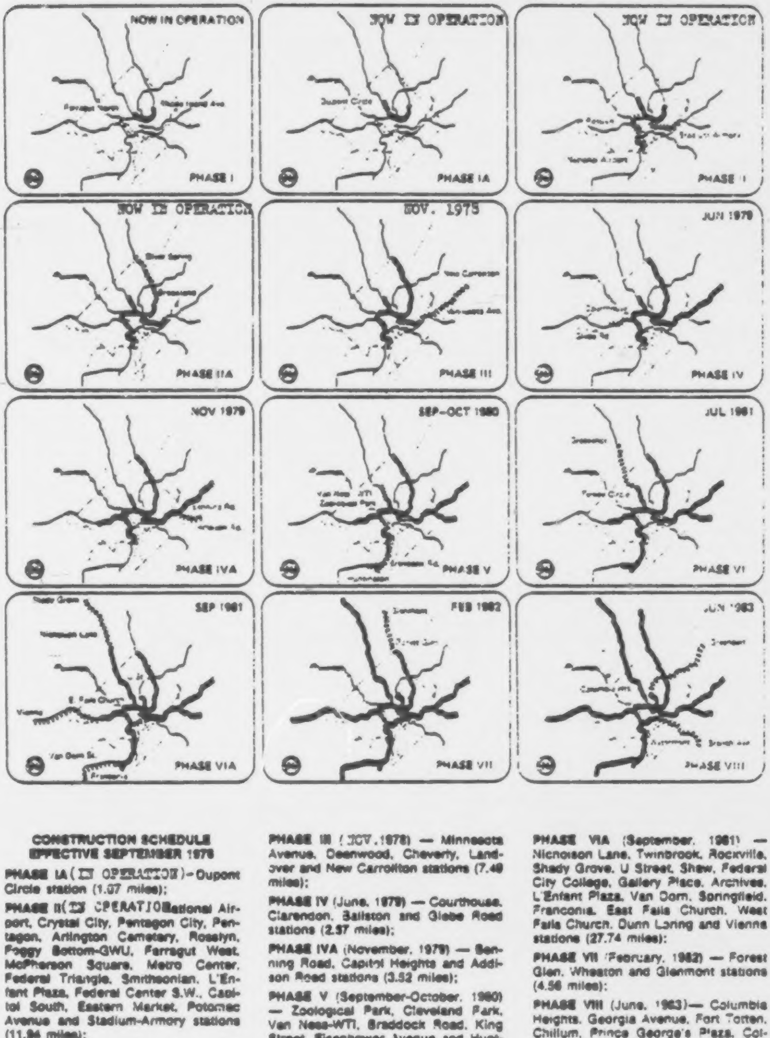
2.2 LAYOUT - The total planned rapid rail transit system is to be 99.7 miles (48.3 in subway and 51.4 on surface) with 87 stations (50 in subway and 47 on surface). The METRORAIL trains will operate over exclusive rights-of-way. Figure 2 illustrates the METRORAIL System layout, and it shows the various stations and the jurisdictions of Northern Virginia (Alexandria, Arlington County, Fairfax County, and Falls Church), Maryland (Montgomery County, and Prince George's County), and the District of Columbia that will be served by the METRORAIL System. METRORAIL service is coordinated with the surface METROBUS Operation that is currently operating over the arterial and expressway systems of the metropolitan area.

2.3 METRORAIL SYSTEM

2.3.1 METRORAIL YARDS AND SHOPS - Six Service and Inspection (S & I) Shops will provide routine maintenance and the Major Service Shop (Brentwood Yard) provides major repair

Subject to Change

Metro Construction And Design Schedule


NOW IN OPERATION
PHASE I
NOW IN OPERATION
Dupont Circle
PHASE IA
NOW IN OPERATION
PHASE II
NOW IN OPERATION
Silver Spring
PHASE IIA
NOV. 1978
New Carrollton
PHASE III
JUN 1979
Courthouse
PHASE IV
NOV 1979
PHASE IVA
SEP–OCT 1980
Van Ness-WTI
Zoological Park
Huntington
PHASE V
JUL 1981
Grosvenor
Tenley Circle
PHASE VI
SEP 1981
Shady Grove
Nicholson Lane
E. Falls Church
Vienna
Van Dorn St.
Franconia
PHASE VIA
FEB 1982
Glenmont
Forest Glen
PHASE VII
JUN 1983
Greenbelt
Columbia Hts.
Branch Ave
PHASE VIII

CONSTRUCTION SCHEDULE
EFFECTIVE SEPTEMBER 1978

PHASE IA (IN OPERATION) - Dupont Circle station (1.07 miles);

PHASE II(IN OPERATIONational Airport, Crystal City, Pentagon City, Pentagon, Arlington Cemetery, Rosslyn, Foggy Bottom-GWU, Farragut West, McPherson Square, Metro Center, Federal Triangle, Smithsonian, L'Enfant Plaza, Federal Center S.W., Capitol South, Eastern Market, Potomac Avenue and Stadium-Armory stations (11.94 miles);

PHASE IIA (IN OPERATION) - Brookland, Fort Totten, Takoma and Silver Spring stations (5.66 miles);

PHASE III (NOV.1978) — Minnesota Avenue, Deanwood, Cheverly, Landover and New Carrollton stations (7.49 miles);

PHASE IV (June, 1979) — Courthouse, Clarendon, Ballston and Glebe Road stations (2.57 miles);

PHASE IVA (November, 1979) — Benning Road, Capitol Heights and Addison Road stations (3.52 miles);

PHASE V (September-October, 1980) — Zoological Park, Cleveland Park, Van Ness-WTI, Braddock Road, King Street, Eisenhower Avenue and Huntington stations (7.79 miles);

PHASE VI (July, 1980) — Tenley Circle, Friendship Heights, Bethesda, Medical Center and Grosvenor stations (6.81 miles);

PHASE VIA (September, 1981) — Nicholson Lane, Twinbrook, Rockville, Shady Grove, U Street, Shaw, Federal City College, Gallery Place, Archives, L'Enfant Plaza, Van Dorn, Springfield, Franconia, East Falls Church, West Falls Church, Dunn Loring and Vienna stations (27.74 miles);

PHASE VII (February, 1982) — Forest Glen, Wheaton and Glenmont stations (4.56 miles);

PHASE VIII (June, 1983)— Columbia Heights, Georgia Avenue, Fort Totten, Chillum, Prince George's Plaza, College Park, Greenbelt, Waterfront, Navy Yard, Anacostia, Alabama Avenue, Naylor Road, Suitland and Branch Avenue stations (15.7 miles).

FIGURE 1

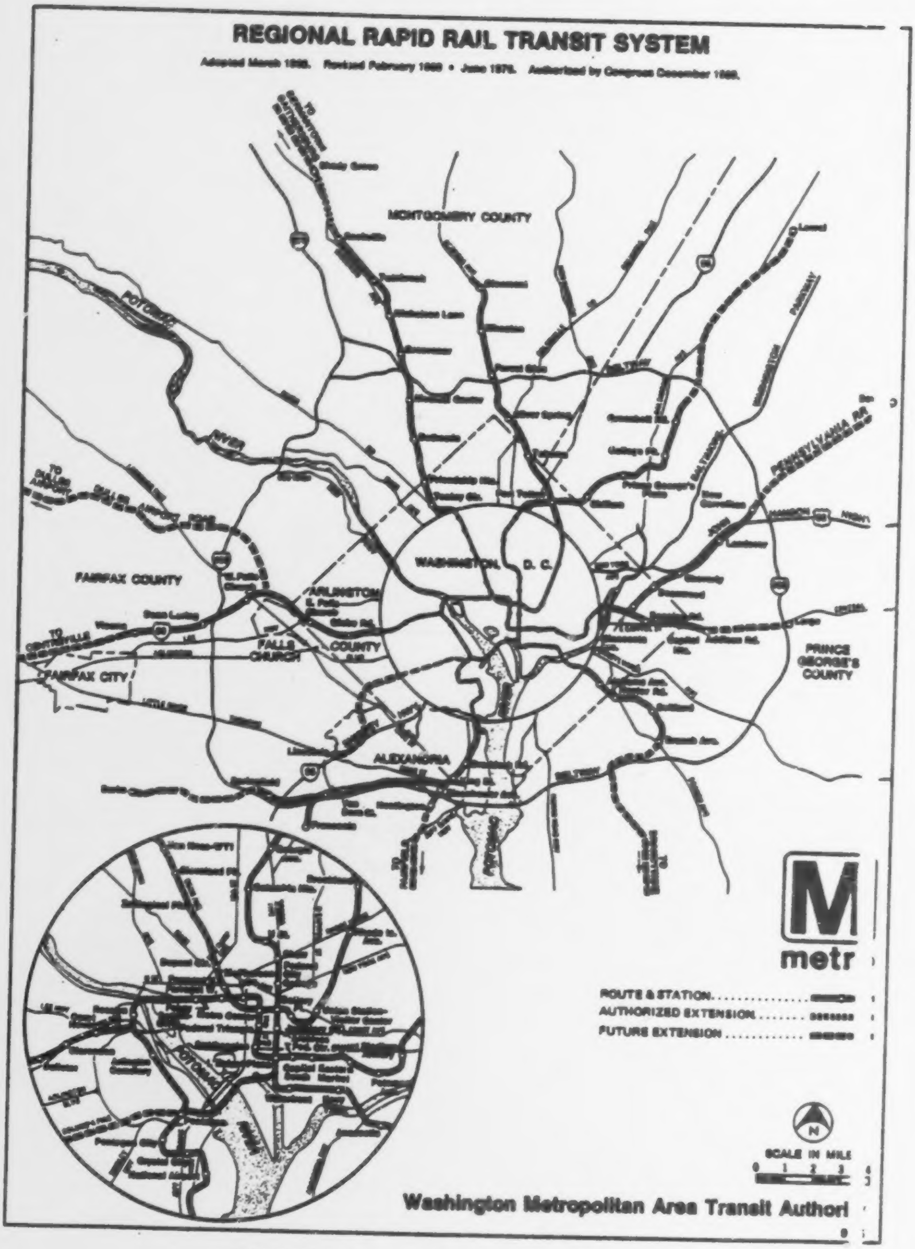

REGIONAL RAPID RAIL TRANSIT SYSTEM
Adopted March 1968. Revised February 1969 • June 1975. Authorized by Congress December 1969.
MONTGOMERY COUNTY
POTOMAC
RIVER
FAIRFAX COUNTY
ARLINGTON
COUNTY
FALLS CHURCH
FAIRFAX CITY
WASHINGTON, D. C.
ALEXANDRIA
PRINCE GEORGE'S COUNTY
PENNSYLVANIA RR.
BELTWAY
metr
ROUTE & STATION
AUTHORIZED EXTENSION
FUTURE EXTENSION
N
SCALE IN MILE
0 1 2 3
Washington Metropolitan Area Transit Authori

FIGURE 2 METRORAIL SYSTEM LAYOUT

facilities to support the operation of the 99.7 mile METRORAIL System. Cleaning, inspections, lubricating, operational testing, minor repairs, and component replacement for the METRORAIL trains will be performed at the S & I Yards. Overhaul, major repair, extensive modifications, wheel turning, spare parts storage, and new car acceptance and preparation will be performed at the Brentwood Yard.

2.3.2 METRORAIL FIXED EQUIPMENT

2.3.2.1 POWER SYSTEMS - The 750 VDC Traction Power System provides for Vehicle electric traction motor propulsion requirements. The traction power system includes contact and running rails, associated conductor system, power substations and tie-breaker stations for conversion and supply of power to the contact rail system including transformers, rectifiers, and switchgear. Reliability is provided in that each segment of contact third rail can be supplied by adjacent traction power substations, and adjacent traction power substations are supplied by separate power company substations wherever practicable.

The 480 Y/277 V Auxiliary Power System provides for lighting, heating, ventilation, air conditioning, escalators and elevators, communications, train control systems, fare collection equipment, emergency power systems, illuminated signs, clocks, alarms, station closed circuit television, public address systems, and pumping stations. Reliability and safety features are provided in the distribution system to prevent loss of power to essential loads (train control, lighting, communications, etc.) due to transformer overtemperature or circuit breaker over current conditions from either power sources that serve each station. Emergency power is provided from an Uninterruptible Power Supply System (Battery) to prevent total loss of lighting and communications in case of a complete loss of AC power.

2.3.2.2 AUTOMATIC TRAIN CONTROL SYSTEM - The Automatic Train Control System regulates train speed and spacing, starts and stops trains, open doors, and monitors trains performance. The train operator can override the automatic system in accordance with procedural controls. The Automatic Train Control System includes Automatic Train Operation, Automatic Train Protection, and Automatic Train Supervision.

2.3.2.3 COMMUNICATIONS SYSTEM - The WMATA Communications System provides an integrated means to assist WMATA personnel in managing and operating a modern, safe, and highly efficient rapid rail system. The Communications System provides a Private Automatic Branch Exchange (PABX), Mobile Radio (Fre. 160.260 MHz), a Teleprinter System (TTY), and a Standard Time Distribution System (STDS) for operations and administration use. The PABX and Mobile Radio (Freq. 161.025 MHz and Freq. 161 235 MHz) provide for emergency and maintenance communications. The Mobile Radio (Freq. 161.385 MHz), a Fire and Intrusion Alarm System (FI), and a closed Circuit Television System (CCTV) provide necessary communication for Security and Property Protection. A Public Address (PA) System and the STDS provide passenger information.

2.3.3 ROLLING STOCK - WMATA operates 300 flanged - steel wheel rapid transit cars. These cars are 75 feet long and 10 feet wide, and each car is capable of seating 81 passengers and has a crush load rating of 220 passengers. They have heavy duty carpeting, contoured padded seats, and air conditioning and provide a comfortable, pleasant, and safe ride. Trains are made of married pairs of cars with a maximum train length of eight cars. They operate over exclusive rights-of-way at speeds up to 75 miles per hour, with an average speed of 35 mph including station stops.

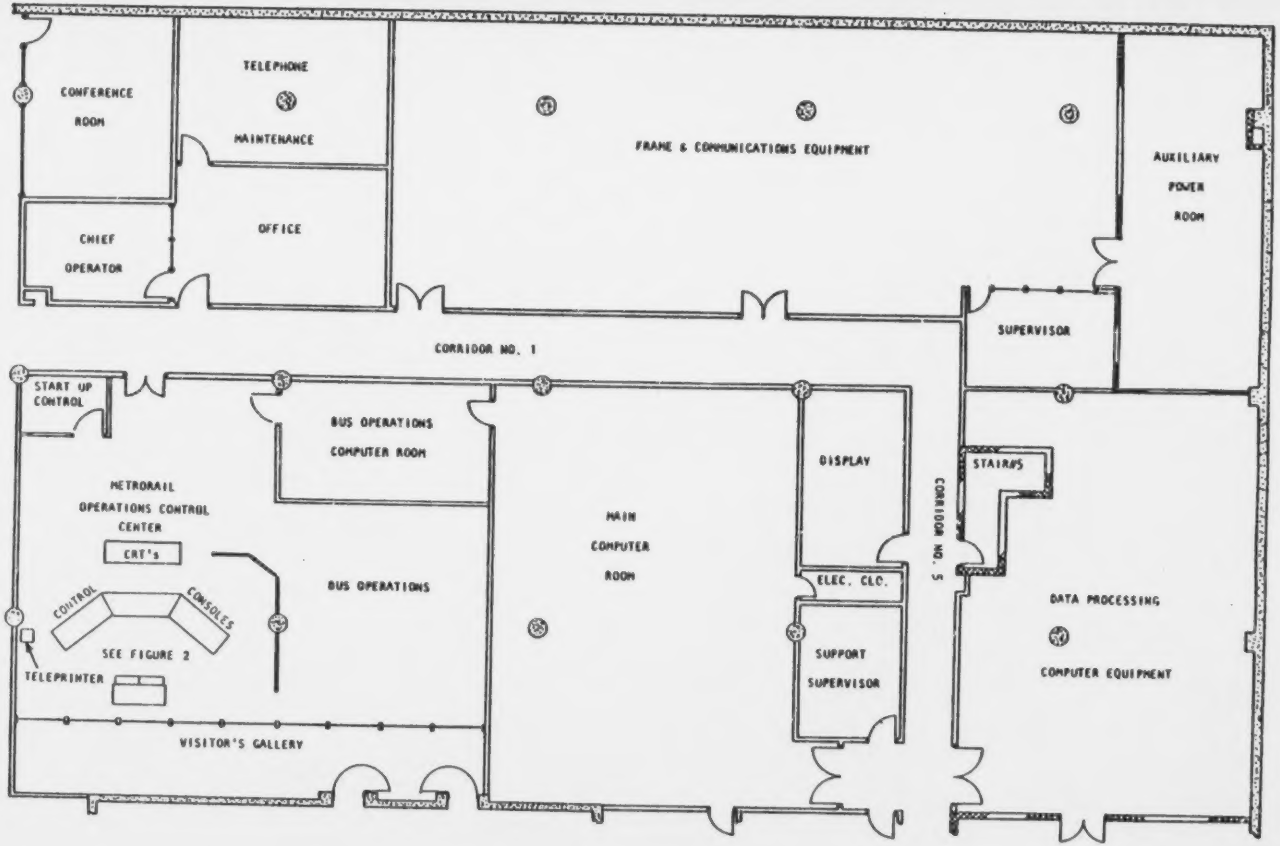
2.3.4 EXISTING METRORAIL SAFETY CAPABILITIES - The following paragraphs provide a brief description of some of the safety capabilities that have been incorporated into METRORAIL Facilities and equipment:

2.3.4.1 SAFETY FEATURES IN WMATA TRANSIT CAR DESIGN - The METRORAIL cars are designed to be "Fail Safe" so that any failure of a safety critical component will automatically cause the train to stop or run at a safe more restrictive speed than that permitted with no failure. The carborne portion of the Automatic Train Protection (ATP) subsystem of the Automatic Train Control (ATC) system as described in the next section ensures safe movement of the train. Trains are designed so that they can not be moved if any side door is not closed and locked. A Daily Safety Test (DST) is performed on every train to ensure proper operation of the ATP subsystem. Emergency braking is provided to stop a train if dynamic braking, and normal friction braking control is lost.

The transit cars were designed to provide emergency opening of car doors to allow passenger evacuation in an emergency. Fire resistant materials are used throughout the cars. Fire extinguishers are provided in each cab. Emergency battery power is provided to allow communications, emergency car lighting, and headlights and taillights if traction power is lost. The intercar Public Address System allows passengers to talk to the train operator from the intercom boxes at both ends of each car, and allows the train operator or the OCC to pass emergency or other instructions to the passengers.

2.3.4.2 SAFETY FEATURES IN AUTOMATIC TRAIN CONTROL (ATC) DESIGN - The ATC System which consists of the carborne and wayside train control and signal system is also designed to be "Fail Safe." The ATP subsystem of the ATC System automatically stops a train before it is operated into a route or segment of track that is occupied by another train, or through a switch that is not set and locked to allow the train movement, or into a segment of track with a broken rail. The ATC system controls train speed to ensure that safe braking distances are always maintained, and to ensure proper train separation.

2.3.4.3 OPERATIONS CONTROL CENTER (OCC) CAPABILITIES - The METRORAIL OCC has the monitoring, control, and communications equipment required to control a safe and efficient rapid transit system, and to handle any emergency situations. Figure 3 is


CONFERENCE ROOM
TELEPHONE MAINTENANCE
FRAME & COMMUNICATIONS EQUIPMENT
AUXILIARY POWER ROOM
CHIEF OPERATOR
OFFICE
SUPERVISOR
CORRIDOR NO. 1
START UP CONTROL
BUS OPERATIONS COMPUTER ROOM
DISPLAY
STAIRWS
CORRIDOR NO. 5
METRORAIL OPERATIONS CONTROL CENTER
CRT's
MAIN COMPUTER ROOM
ELEC. CLO.
DATA PROCESSING
CONTROL
CONSOLES
BUS OPERATIONS
SEE FIGURE 2
TELEPRINTER
SUPPORT SUPERVISOR
COMPUTER EQUIPMENT
VISITOR'S GALLERY

LAYOUT OF OCC AND ASSOCIATED ROOMS

FIGURE 3

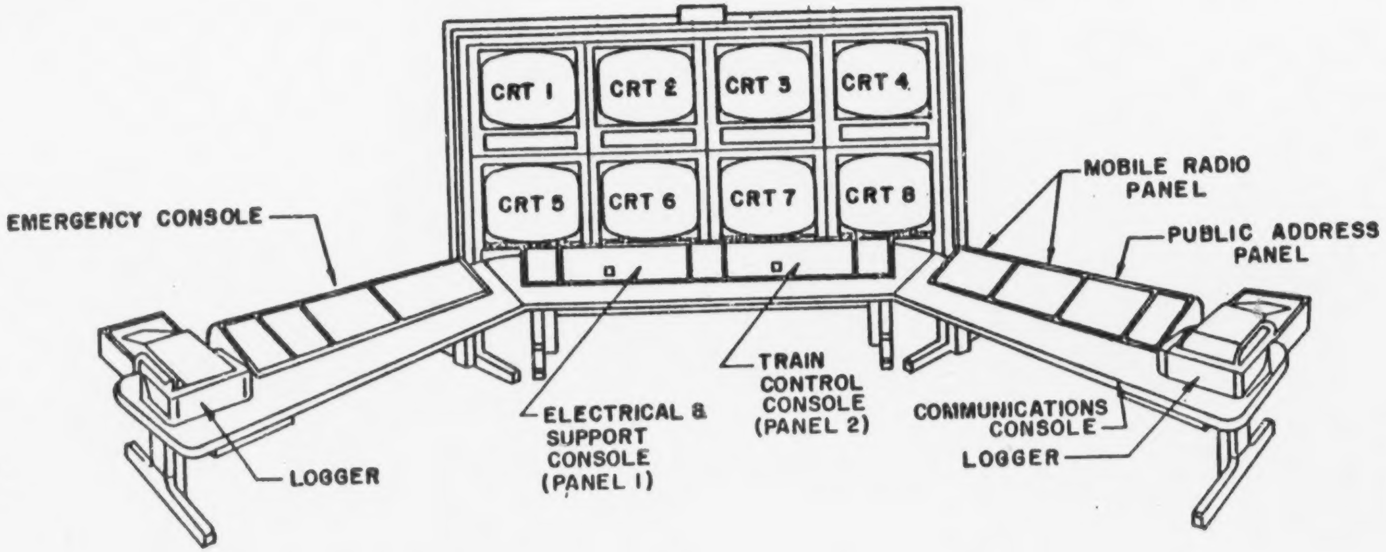
a Layout of the OCC and Associated Rooms, and Figure 4 shows the location of the OCC Consoles.

The OCC equipment allows monitoring of train positions; switch positions, signal status and malfunctions; fire and intrusion alarms; traction power system status and malfunctions; and pumping station alarms.

The OCC equipment provides supervisory control of interlockings and switches; the traction power system; and ventilation fans and louvers.

The OCC Equipment provides the capability of direct communications via radio, telephone, and/or public address with:

1. Train Operators and Train Passengers.
2. Station Attendants and Passengers in Stations.
3. Systems Maintenance (ATC, Communications, Power), Car Maintenance, and General Maintenance (Track, Structures, Ventilation, Pumping, and Stations).
4. Road, terminal, and yard supervisors.
5. Local Fire/Rescue Communications Centers.
6. WMATA and Local Police.
7. Bus Control Center.
8. Control Towers of Common Corridor Railroads.


CRT 1
CRT 2
CRT 3
CRT 4
CRT 5
CRT 6
CRT 7
CRT 8
EMERGENCY CONSOLE
LOGGER
ELECTRICAL & SUPPORT CONSOLE (PANEL 1)
TRAIN CONTROL CONSOLE (PANEL 2)
MOBILE RADIO PANEL
PUBLIC ADDRESS PANEL
COMMUNICATIONS CONSOLE
LOGGER

NOTE: TELEPRINTER IS NOT SHOWN

OPERATIONS CONTROL CENTER - PHYSICAL LAYOUT

FIGURE 4

Reliability is provided for the OCC Integrated Digital Computer System by having a Back-Up Computer which is automatically switched in if the control computer malfunctions. Two Diesel Generators provide a standby power source if normal building power is lost; and, critical OCC communication equipment and computer functions are supplied by an Uninterruptible Power Source (UPS) which will provide thirty minutes of power in the event of a complete failure of the normal and standby power systems.

The OCC staff of four supervisors has complete control of the METRORAIL operation, and has all necessary equipment to coordinate activities required for correction of an emergency and/or abnormal situations in accordance with the established Standard Operating Procedures (APPENDIX B). The Standard Operating Procedures (SOP's) have been prepared to provide guidance for all employees engaged in abnormal and/or emergency situations that could occur on the METRORAIL System.

2.3.4.4 STATION SAFETY PROVISIONS - The following safety provisions have been incorporated in WMATA Stations:

2.3.4.4.1 EMERGENCY TRIP STATION (ETS) BOXES - An ETS Box is provided at each end of every platform to allow emergency removal of traction power if a person falls to the track or any other emergency occurs. Emergency telephones are included at all ETS boxes and they provide direct communications to the OCC which has direct radio communications to all trains in the area, and direct phone lines to the local fire, rescue, police, and emergency agencies to coordinate response to the emergency by implementing the appropriate METRORAIL Standard Operating Procedures (SOP's).

2.3.4.4.2 TV SURVEILLANCE SYSTEM - The METRORAIL stations were designed to be open to eliminate recessed or hidden areas and to allow wide open sight lines for the station attendants, and METRO Transit Police. In addition, all passenger stations are equipped with CCTV Cameras to provide safety and security monitoring of the stations. TV monitors for these cameras are located in the Station Kiosk(s).

2.3.4.4.3 FIRE EQUIPMENT - Each station has a fire alarm equipment control panel equipped with a minimum of seven separate fire zone circuits with ionization detector, and/or combined fixed temperature and rate of rise fire detector sensors which provide an alarm both at the station kiosk and the OCC. Activation of a fire detector sensor stops all entry escalators to prevent passengers from entering the station, and it causes the passenger control arms of the faregates to open to allow unimpeded egress from the station.

Fire standpipes are located on the station platforms, in vent/fan shafts, and in the METRORAIL tunnels. Fire extinguishers are located in station Fire Equipment Cabinets, station kiosks, train control rooms, communications rooms, mechanical equipment rooms, fan shafts, and at ETS boxes.

The stations have ventilation fans which normally operate under thermostatic control to remove train generated heat. Under emergency conditions, the fans can be remotely controlled from the OCC to exhaust smoke.

2.3.4.4.4 OTHER METRORAIL STATION SAFETY FEATURES - In addition to the emergency phones at the ETS boxes, phones are located at the kiosks to provide a direct line to the OCC. The public address system provides direct communications from the OCC or the kiosk to passengers in the stations, and from the OCC and train operators to passengers in the trains. The PA System is used to provide emergency instructions to passengers, to provide instructions on the safe and proper use of the METRORAIL System, and other information and instructions.

The METRORAIL stations are built on a straight section of track so there is always a minimal separation between the platform and the train. Platform lights are installed along the granite edge of the platform which pulsate to notify passengers that a train is arriving which decreases the tendency of passengers to stand on the edge to watch for the train.

2.3.4.5 EMERGENCY EXITS - Emergency exits are provided in all single entry underground stations in the fan or vent shaft furthest from the station entrance. There are twenty emergency exits (or access) in the fan and vent shafts on the present METRORAIL Revenue System. A complete listing of all emergency exits on the METRORAIL Revenue System is given in APPENDIX C.

There will be a total of 95 Emergency Exits in the completed METRORAIL System.

2.3.4.6 EMERGENCY TUNNEL VENTILATION - In addition to the station ventilation fans, there are 27 fan shafts and 50 vent shafts in the present METRORAIL System. Some of these serve as emergency exit or entrance shafts as described in the preceding paragraph. The fan and vent shafts are used to remove train generated heat from the tunnels. The fans and louvers in these shafts are under thermostatic control under normal conditions. Under emergency conditions, the OCC can remotely control the fans and louvers to exhaust smoke and to control the direction of exhaust to allow fire/rescue crew access, and passenger evacuation.

There will be a total of 76 fan shafts and 114 vent shafts in the completed METRORAIL System.

2.3.4.7 EMERGENCY PUMPING - There are 17 automatically controlled drainage pumping stations in the present METRORAIL Revenue System. There will be a total of 43 pumping stations in the completed METRORAIL System. These pumping stations were designed to control water accumulation in METRORAIL tunnels caused by rainwater, streetwater, or groundwater. Each pumping station includes a lead pump and a lag pump which can carry the pumping load independently. Lag pump and high water level sensors provide alarms to the OCC if there is a malfunction or an excess accumulation of water.

2.3.4.8 RIGHT OF WAY, AND ELEVATED STRUCTURE SAFETY PROVISIONS - Six foot, chain-link, barbed wire topped fences have been installed on both sides of all at grade METRORAIL Rights of Way to prevent pedestrians from coming in contact with the third rail or from being struck by a METRORAIL train.

Safety railings (on both sides) and safety walks have been installed on all elevated structures to protect personnel from falls and to allow clear passage of personnel and trains.

ETS boxes with emergency phones have been installed every 800 feet along all underground, elevated, and at grade track sections.

2.3.4.9 COMMON CORRIDOR SAFETY PROVISIONS - On routes where METRORAIL shares an at grade common corridor with other rail properties, an Intrustion Detection and Warning (IDW) System has been attached to the Right of Way fences. The IDW consists of a frangible cable which is attached to the length of the fence, tilt switches which are attached to every other fence post, and an alarm panel in the WMATA OCC which indicates the location of an intrusion of either WMATA or Chessie (or AMTRAK or Conrail) Equipment into the Right of Way of the other. Dedicated phones have been installed between WMATA OCC and the railroad control towers.

If a derailment or intrusion occurs, or if a fire or other common corridor emergency is reported to OCC; the OCC notifies all METRORAIL trains in the area to stop, requests the appropriate railroad(s) to stop or restrict their train movement, and notifies the appropriate fire department or emergency crews to respond to the emergency. Response to the emergency is coordinated by the OCC with the appropriate railroad(s) and fire/emergency crew(s) in accordance with the established Agreements (APPENDICES D, E, and F) and the WMATA Standard Operating Procedures by use of the dedicated emergency phones from the OCC to the railroad control tower(s), and the fire/rescue communication center(s).

2.3.5 METRORAIL SERVICE AND OPERATION

2.3.5.1 CURRENT SERVICE AND OPERATION - WMATA currently operates 300 rapid transit cars and employees 1,050 operators, station attendants, controllers, mechanics, and maintenance personnel to serve its 185,000 average weekday passengers on the 23 mile/29 station segment presently in service. METRORAIL makes 471 daily trips covering 33,000 car miles. Train headways are 5 minutes during peak hours and 10 minutes during off-peak hours. METRORAIL operates Monday through Friday from 6 a.m. to 8 p.m.

2.3.5.2 FUTURE SERVICE AND OPERATION - METRORAIL will be constantly expanding over the next several years as new phases open (Figure 1), and it will be constantly adding new routes, new equipment, and new personnel.

The completed system will serve a projected 900,000 daily passengers by 1990. Train headways will be two minutes on main lines and four minutes on branch lines during peak hours. Operation will be 5 a.m. to 1 a.m. including weekends and holidays.

Additions to service and operations for 1978 include expansion of service from 6 a.m. to 12 p.m. on weekdays, start of Saturday service from 8 a.m. to 12 p.m. in September, and opening of Phase III from Stadium Armory to New Carrollton in the autumn. A Specification for Procurement of 184 New Cars is currently being prepared with delivery of first new car scheduled for 24 months after contract award.

2.4 METROBUS SYSTEM

2.4.1 METROBUS YARDS AND SHOPS - The following eight divisions with bus yards and shops are located in the Metropolitan Area to serve the various jurisdictions:

DIVISION	LOCATION
Arlington	707 N. Randolph Street Arlington, VA.
Bladensburg	2250 - 26th Street, N. E. Washington, D. C.
Four Mile Run	3501 S. Glebe Road Alexandria, VA.
Northern	4615 - 14th Street, N. W. Washington, D. C.
Prince George's	4421 Southern Avenue, S. E. Coral Hills, MD.
Royal Street	600 N. Royal Street Alexandria, VA.
Southeastern	17 M Street, S. E. Washington, D. C.
Western	5230 Wisconsin Avenue, N. W. Washington, D. C.

These yards and shops serve as dispatch points for our bus service; and, provide cleaning, inspection, maintenance, and repair for our buses.

2.4.2 METROBUS OPERATION - WMATA operates 1,900 buses and employees 2,800 operators and 800 mechanics to serve its 2.5 million weekly passengers. METROBUS makes 16,000 trips and cover 156,000 route miles on an average weekday. The METROBUS base day is from 5 a.m.

to 1 a.m. with 1 a.m. to 5 a.m. owl service on certain routes. METROBUS operation is coordinated with METRORAIL, and special bus lanes are provided into METRORAIL Stations to facilitate transfer. METROBUS shuttle service from METRORAIL Station to METRORAIL Station can be provided during any extended disruption of METRORAIL Service, and this shuttle is coordinated by the adjacent METROBUS/METRORAIL Operation Control Centers in the WMATA Operations Control Center Building (Figure 3).

2.4.3 EXISTING METROBUS SAFETY CAPABILITIES - All Metrobuses meet the requirements of the Federal Motor Safety Carrier Safety Regulations (Reference 1) of the U.S. Department of Transportation. All buses are equipped with two way radios to notify the METROBUS Control Center of any accidents or emergencies so that METRO Police, local police, fire/rescue, or emergency crews can be dispatched to respond to the situation. The buses are also equipped with a silent alarm system which can be activated by the operator when a crime occurs and which can identify a bus on a scheduled route so that police units can be dispatched to assist the operator and his passengers.

3.0 SAFETY MANAGEMENT

3.1 SAFETY ORGANIZATION AND RESPONSIBILITIES - The WMATA General Manager has been charged by the Board of Directors with implementing and managing the overall safety program, which consists of two distinct efforts, System Safety and Construction Safety. Responsibility for these activities has been delegated by the General Manager to various WMATA Officers, as described below.

3.2 SYSTEMS SAFETY ORGANIZATION - The WMATA Safety Officer has been delegated by the General Manager and the Assistant General Manager of Transit Services to prepare and implement the WMATA System Safety Program Plan for the METRORAIL/METROBUS System to ensure a level of safety during System Operation that is acceptable to the Authority, the general public, regulatory bodies, and funding agencies.

This System Safety Program Plan is the tool that is used to make sure, insofar as humanly possible, that no safety measures are overlooked. It describes and specifies the WMATA Safety Goals and the means to be employed in meeting them. In general, it specifies safety activities and delegates responsibility for performing them, and provides the means for management to monitor and control the safety program. The Safety activities that are performed under the direction of the Safety Officer include:

(a) System Safety Analyses

(b) System Safety Design Reviews
(c) Safety Training
(d) Safety Inspections
(e) Fire Protection
(f) Accident/Incident Reporting and Investigation
(g) Safety Reporting (Internal, External)

Figure 5 is the Organization Chart for the WMATA Safety Branch.

3.3 SECURITY - The Director of SURE (Security) has been delegated with the responsibility to protect WMATA passengers/employees from crime; to protect WMATA property from acts of vandalism, theft, and damage; and to coordinate these activities with local police agencies.

3.4 CONSTRUCTION SAFETY - The Construction Safety Engineer has been delegated by the General Manager and the Assistant General Manager of Design and Construction with the responsibility to implement the WMATA Construction Safety Program (APPENDIX G), and to monitor the following construction phase activities performed by WMATA's Construction Consultants and Contractors.

(a) Construction Safety Program and Procedures.
(b) OSHA Construction Training/Orientation.
(c) Work Site Implementation of WMATA Construction Safety Program.

In addition, the National Loss Control Service Corporation (NATLSCO) provides independent inspections of METRO construction job sites to assure that the contractors are performing their

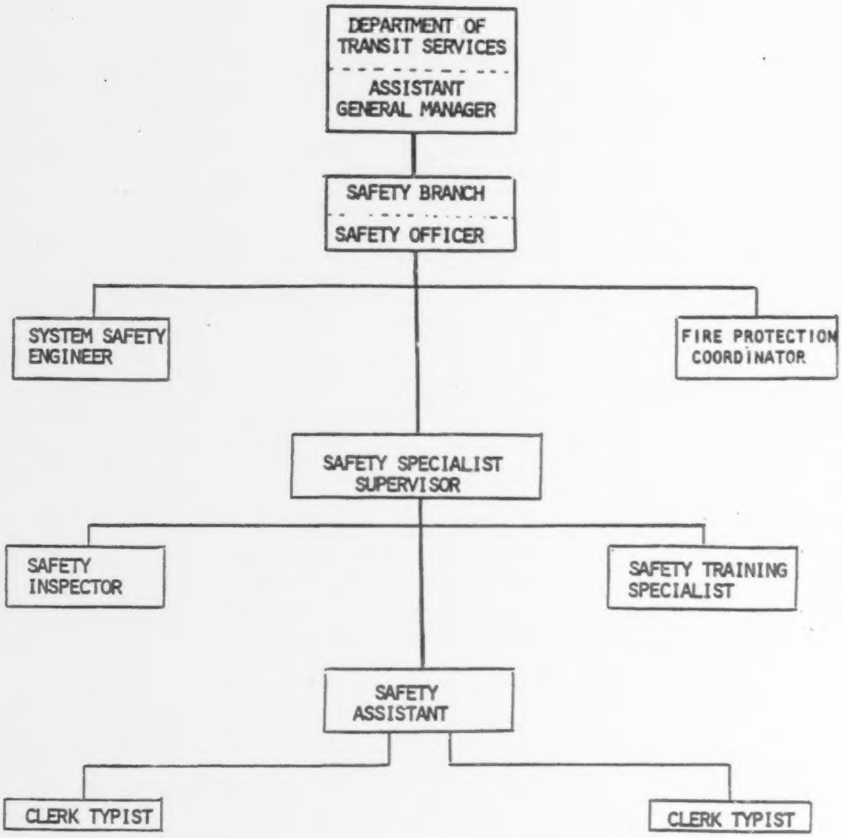

DEPARTMENT OF TRANSIT SERVICES
ASSISTANT GENERAL MANAGER
SAFETY BRANCH
SAFETY OFFICER
SYSTEM SAFETY ENGINEER
FIRE PROTECTION COORDINATOR
SAFETY SPECIALIST SUPERVISOR
SAFETY INSPECTOR
SAFETY TRAINING SPECIALIST
SAFETY ASSISTANT
CLERK TYPIST
CLERK TYPIST

FIGURE 5

WMATA SAFETY BRANCH ORGANIZATION CHART

work within approved safety standards. NATLSCO reports to WMATA's Secretary - Treasurer through our insurance representative, METRO Insurance Administrators (MIA).

3.5 SAFETY MANAGEMENT INTERRELATIONSHIPS - The safety relationships between the WMATA organization and consultants is shown on Figure 6.

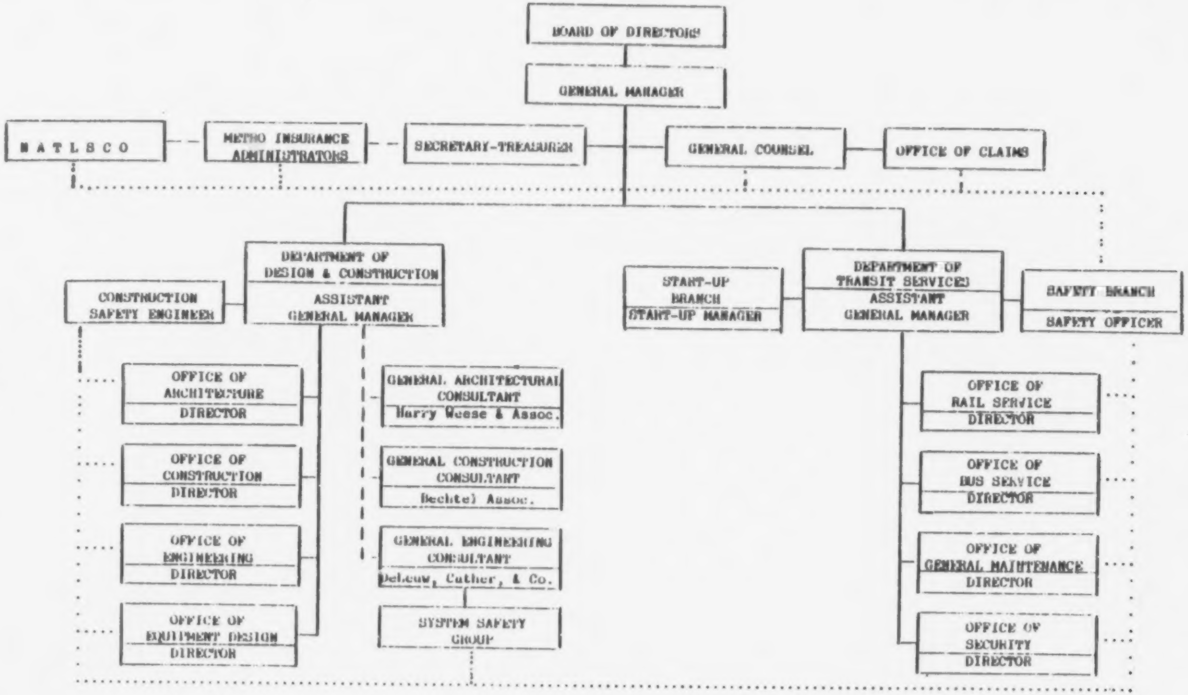

BOARD OF DIRECTORS
GENERAL MANAGER
NATLSCO
METRO INSURANCE ADMINISTRATORS
SECRETARY-TREASURER
GENERAL COUNSEL
OFFICE OF CLAIMS
DEPARTMENT OF DESIGN & CONSTRUCTION
ASSISTANT GENERAL MANAGER
CONSTRUCTION SAFETY ENGINEER
OFFICE OF ARCHITECTURE
DIRECTOR
OFFICE OF CONSTRUCTION
DIRECTOR
OFFICE OF ENGINEERING
DIRECTOR
OFFICE OF EQUIPMENT DESIGN
DIRECTOR
GENERAL ARCHITECTURAL CONSULTANT
Harry Weese & Assoc.
GENERAL CONSTRUCTION CONSULTANT
Bechtel Assoc.
GENERAL ENGINEERING CONSULTANT
DeLeuw, Cather, & Co.
SYSTEM SAFETY GROUP
START-UP BRANCH
START-UP MANAGER
DEPARTMENT OF TRANSIT SERVICES
ASSISTANT GENERAL MANAGER
SAFETY BRANCH
SAFETY OFFICER
OFFICE OF RAIL SERVICE
DIRECTOR
OFFICE OF BUS SERVICE
DIRECTOR
OFFICE OF GENERAL MAINTENANCE
DIRECTOR
OFFICE OF SECURITY
DIRECTOR
LINE
CONSULTANT
COMMUNICATION LINK/SYSTEM SAFETY

FIGURE 6

WMATA SAFETY MANAGEMENT INTERRELATIONSHIPS

4.0 SYSTEM SAFETY ACTIVITIES

4.1 System Safety Analyses - Safety analyses are performed as part of the process of assuring adequate consideration of safety in WMATA design and operations. These safety analyses are performed to evaluate and establish the conformity of system design and operations to accepted safety requirements and to recommend design and procedural changes where deficiencies exist in meeting system safety requirements. The following subsections describe the types of Safety Analyses that are performed.

4.1.1 FAILURE MODE AND EFFECTS ANALYSES - A Failure Mode and Effects Analysis (FMEA) is a technique for identifying conditions which have the potential for causing an accident or an unsafe event due to a single point equipment failure. The FMEA identifies the equipment failure mode; the effect of the failure mode on the system; the hazard category (Appendix H) in terms of potential personnel injury or system damage; and a safety assessment which states actions to be taken to eliminate or control the hazard or a determination that the failure mode is safety acceptable. Figure 7 is a sample FMEA worksheet.

Twenty-three System Safety Analyses which employ the Failure Mode and Effects Analysis (FMEA) technique have been performed on major METRORAIL Equipment Systems. Others are presently being performed. These safety analyses were performed to identify any equipment safety deficiencies and to recommend design and/or procedural changes required to eliminate or minimize hazards. A listing of the FMEA's that have been, or are being, performed is contained in APPENDIX I.

FAILURE MODES AND EFFECTS ANALYSIS

SYSTEM	Friction Brakes
SUBSYSTEM	Emergency Sensing System
DWG. NO.	ABEX 10600 & 20215
DESIGNER	ABEX

PERFORMED BY: R. S. Kane
DATE: 4/76

ITEM	DESCRIPTION	OPERATION	FAILURE MODE	FAILURE EFFECT ON SYSTEM	CATEGORY	SAFETY ASSESSMENT
27.	Accumulator Low Hydraulic Fluid Level Switch (Microswitch & K-9 Relay).	Monitors accumulator fluid level and detects approaching unsafe level. The K-9 relay will open the emergency circuit if less than 60 cu. in. of fluid is indicated.	a. Fails to detect.	EHR does not open, emergency magnet valve does not vent brake air pipe so emergency braking is not applied electrically at time of fault. However, differential pressure would open and cause a hold at next stop.	II	Procedural verification required. The possibility of this failure is very remote since the float switch would detect low level also; the field loss relay would detect power loss; the motor running switch would detect either of above; and any of the detections would have resulted in the train being held in previous station.
			b. Erroneous Detection.	A nuisance stop of train.	II	
28.	Recharge Enable Pressure Switch.	Switches alternate source of BA+ to the emergency magnet valves when the brake air pipe pressure falls below 15 psi.	a. Fails Open (either of two RCE's in series).	After an emergency brake application, no power is available to close the emergency magnet valve during the time the brake pipe pressure switch remains open. Therefore, the brake air pipe will not hold pressure.	II	Procedural verification required.

FIGURE 7 -- SAMPLE FAILURE MODES AND EFFECTS ANALYSIS (FMEA) WORKSHEET

4.1.2 FAULT TREE ANALYSES - A Fault Tree Analysis (FTA) is a technique for identifying combinations of possible events that could result in a postulated serious accident (e.g., a collision). The FTA is a graphical technique using logic diagrams to record the hierarchy of events (equipment failures, personnel errors, environmental conditions, and procedural deficiencies) that illustrates the various critical paths of events that could lead to the occurrence of the postulated accident (e.g., collision). The logic diagrams provide a precise understanding of the interactions of the events that cause the postulated accident, and the best way to minimize the likelihood of occurrence. As a result of the test train collision of September 11, 1977, an FTA is being made to determine the likelihood of a collision occurring in revenue service. Figure 8 is a sample FTA logic diagram.

4.1.3 PROCEDURES AND RULES ANALYSES - Procedures and rules analyses are performed to identify and implement the safety requirements that should be met to assure safe operation of the Metrorail System. Data required for the performance of these analyses include:

a. Drawings, specifications, and hardware descriptions.
b. Results of all safety analyses previously performed.
c. Historical data on incidents from actual Metrorail operations.

These analyses are performed to determine the adequacy of the safety requirements that are contained in training manuals, rulebooks, procedures, and equipment that are used during operation and maintenance of the Metrorail System. Results of these analyses provide the basic assurance that adequate safety provisions and requirements

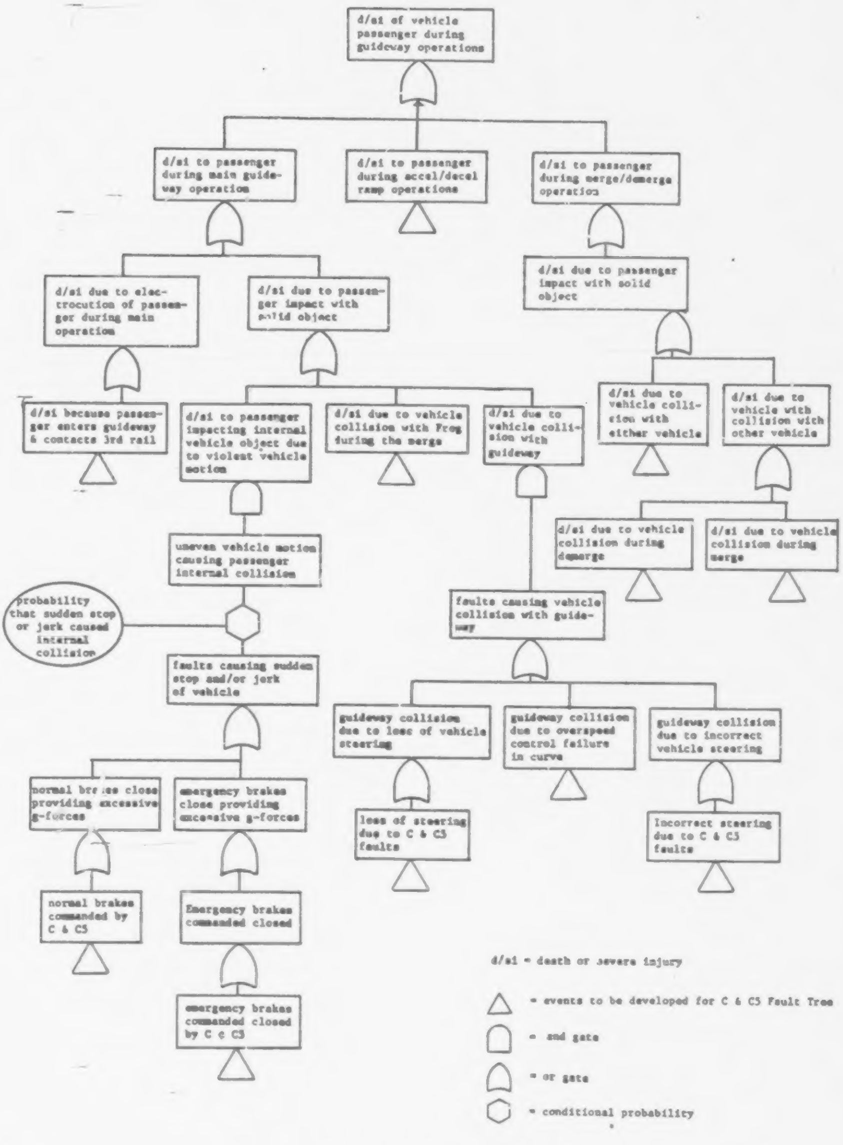

d/si of vehicle passenger during guideway operations
d/si to passenger during main guideway operation
d/si to passenger during accel/decel ramp operations
d/si to passenger during merge/demerge operation
d/si due to electrocution of passenger during main operation
d/si due to passenger impact with solid object
d/si due to passenger impact with solid object
d/si because passenger enters guideway & contacts 3rd rail
d/si to passenger impacting internal vehicle object due to violent vehicle motion
d/si due to vehicle collision with Frog during the merge
d/si due to vehicle collision with guideway
d/si due to vehicle collision with either vehicle
d/si due to vehicle with collision with other vehicle
d/si due to vehicle collision during demerge
d/si due to vehicle collision during merge
uneven vehicle motion causing passenger internal collision
probability that sudden stop or jerk caused internal collision
faults causing sudden stop and/or jerk of vehicle
faults causing vehicle collision with guideway
guideway collision due to loss of vehicle steering
guideway collision due to overspeed control failure in curve
guideway collision due to incorrect vehicle steering
normal brakes close providing excessive g-forces
emergency brakes close providing excessive g-forces
loss of steering due to C & C3 faults
Incorrect steering due to C & C3 faults
normal brakes commanded by C & C3
Emergency brakes commanded closed
emergency brakes commanded closed by C & C3
d/si = death or severe injury
△ = events to be developed for C & C3 Fault Tree
= and gate
= or gate
⬡ = conditional probability

FIGURE 8

SAMPLE FAULT TREE ANALYSIS (FTA) WORKSHEET are included in training manuals, rulebooks, and standard operating procedures for operations, maintenance, and performance of emergency operations to minimize patron/personnel hazards.

4.2 SYSTEM SAFETY REVIEWS (Design and Operations) - System Safety Design Reviews shall be an integral part of all design reviews held for major Metrorail facilities and equipment that are procured. Operations Safety Reviews will be held on an ad hoc basis to identify equipment, procedural, or training requirement changes that are required to eliminate any safety deficiency or hazard that has been identified during the operation of the Metro System.

4.2.1 SAFETY DESIGN REVIEWS - Safety design reviews will be conducted to assess the compliance of facility, or equipment design with the overall safety program objectives and to ensure that the safety incorporated in existing Metrorail Equipment is not degraded by the addition of the new facility or equipment to the System. Additional ad hoc safety reviews may be scheduled by the Safety Branch with the cognizant design group to coordinate resolution of safety problems.

4.2.1.1 SAFETY DESIGN CRITERIA AND CONSIDERATIONS - When a new facility, system, or equipment specification is prepared, it shall require the responding contractors to consider the following in its design and procedure development:

(a). Compatibility with the safety features, design, and procedures of the existing Metrorail System.

(b). Incorporating "fail-safe" principles when failures would disable the system or cause a catastrophe through injury to personnel, damage to equipment, or inadvertent operation of critical equipment.

(c). Avoiding, eliminating, or reducing identified significant safety hazards by design change, safety devices, parts or material selection. Composition of hydraulic fluids, lubricants, and other materials shall provide optimum safety characteristics and fire resistant properties.

(d). Locating equipment components so that access to them by personnel during operation, maintenance, repair, or adjustment shall not require exposure to hazards such as electrical shock, burns, cutting edges, sharp points, or dangerous or toxic materials.

(e). Designing to minimize severe damage or injury to personnel and equipment in the event of an accident.

(f). Avoiding undue exposure to physiological and psychological stresses which might cause errors leading to mishaps.

(g). Providing suitable warning and caution notes in operations, assembly, maintenance, and repair instructions; and distinctive markings on hazardous components, equipment or facilities for personnel protection.

4.2.1.2 SYSTEM SAFETY DESIGN PRECEDENCE - Actions for satisfying safety requirements, in order of precedence, are specified below:

(a). Design for minimum hazard. The major safety effort throughout the design phases of a contract shall be to select appropriate safety design features (e.g., fail safe, redundancy).

(b). Safety Devices. Known hazards that cannot be eliminated through design selection shall be reduced to an acceptable level through the use of appropriate safety devices.

(c). Warning Devices. Where it is not possible to preclude the existence or occurrence of an identified hazard, devices shall be employed for the timely detection of the condition and the generation of an adequate warning signal.

(d). Where it is not possible to reduce the magnitude of an existing or potential hazard through design, or the use of safety and warning devices; the contractor shall develop special procedures to control the hazard.

4.2.1.3 CONTRACTOR SAFETY DESIGN REVIEWS - Contractors who supply systems, subsystems, or equipment that affect safe train movement or passenger safety shall establish and maintain a System Safety Program. The requirements of the contractor's Safety Program will be specified in the contract specification which will define objectives, tasks, procedures, schedules, and data submittals for the safety activities that must be performed by the contractor. The objective of the Contractor Safety Design Reviews is to ensure that the contractor supplied facilities and equipment do not degrade the safety incorporated into the existing Metro System, and to provide the means for monitoring the contractor's safety activities.

4.2.2 OPERATIONS SAFETY REVIEWS - Operations safety reviews will be held on an ad hoc basis to identify equipment, procedural, or training changes that are required to eliminate any safety deficiency or hazard that has been identified during the operation of the Metrorail System.

These reviews will be conducted by the Safety Branch, with the participation of cognizant Transit Services Offices, Design and Construction Offices, and Consultants.

4.3 SAFETY PROCEDURES AND RULES - WMATA Safety Procedures and Rules are contained in the Handbook of Metrorail Operating Rules (Reference 2), the Standard Operating Procedures (Reference 3), and the General Safety Rules (Reference 4). The Safety Branch is responsible for publishing these documents, revising them when required, and issuing them to TRSV offices to ensure that employees are trained and drilled to follow the rules and procedures.

4.4 SAFETY TRAINING - The Safety Branch (1) conducts a safety initiation program for all new employees; (2) conducts monthly safety courses in First Aid and CPR; and (3) participates in training programs conducted by all Transit Services Offices.

The Offices of Rail Service (Rail Operations; Car Maintenance Branch; and Systems Maintenance), General Maintenance (Track and Structures, Stations, and Buildings), SURE (Security), and Bus Services conduct training programs to ensure that their personnel understand the Rules, and Standard Operating Procedures that apply to their work assignments. The Safety Branch works with the training instructors in these offices in formulating Annual Examinations on the Handbook or Metrorail Operating Rules; the Standard Operating Procedures; and General Safety Rules.

4.4.1 CREW QUALIFICATIONS - All new train operators are given a 280-hour Train Operator Training Course (Reference 5) which is designed to allow the trainee to learn rules, procedures, and actual train operation in an orderly step-by-step progression. This is followed by a 40-hour Train Operator Course for Revenue Service (Reference 6) which provides a first week of train operation in passenger service under direct supervision of an experienced operator and instructors, to allow a more confident transition from non-revenue to revenue operation. Each operator is given an annual 4 hour Refresher Course (Reference 7) on rules and procedures for the safe and efficient performance of his duties. This training is conducted under the direction of the General Superintendent of Rail Operation.

Similar Training programs are conducted under the direction of the General Superintendents of Car Maintenance and Systems Maintenance of the Office of Rail Services and the Directors of Security, General Maintenance and Bus Services.

4.4.2 IMPOSED STANDARD TRAINING - All Metrorail operating personnel (train operators, Operations Control Center supervisors, station attendants, and transit police), and maintenance personnel (car maintenance; track and structures maintenance; automatic train control, power, and communications maintenance) who work on the METRORAIL System are trained to be thoroughly familiar with and to perform in accordance with:

1. All rules contained in the Handbook of Metrorail Operating Rules;
2. The Standard Operating Procedures (Appendix B) that apply to their work assignments;
3. The Metrorail General Safety Rules-Operations and Maintenance; and

4. Rules and procedures that are contained in the instruction manuals for their work assignments.

All Metrorail operating and Maintenance personnel must pass an annual examination on the "Book of Rules", the Standard Operating Procedures and General Safety Rules that apply to their work assignments. Any personnel who fail the annual examination are given special retraining until they pass their examination. These annual examinations are conducted by the various Metrorail operations and Maintenance branches, with assistance from the Safety Branch. Records of these examinations will be maintained by the various departments.

All Metrobus operators must be familiar with and perform in accordance with the Metrobus Standard Operating Procedures which are listed in Appendix J. They must comply with all rules and regulations contained in the "Handbook-Rules and Regulations for Metrobus Operators" (Reference 8).

Violations of Metrorail or Metrobus rules, regulations, and procedures result in disciplinary action (cautions, reprimands, suspensions, or dismissal) in accordance with the rulebooks.

4.5 SAFETY INSPECTIONS

4.5.1 FACILITIES INSPECTIONS - The Safety Branch makes periodic safety inspections of Metrorail passenger stations to detect and eliminate hazards to ensure the safety of passengers using WMATA facilities. All WMATA bus and rail operating and maintenance facilities are inspected twice each year to insure the safety and health of all employees are protected in accordance with P.L. 91.596. The Safety Branch issues an inspection report after each of these inspections which lists the hazards, and safety and health problems found during the inspection. The office (RAIL, BUSV or GMNT) responsible for the facility is required to respond in writing within 30 days to list corrective actions taken. Follow-up inspections and reports are made 45 days, and 90 days after the initial inspection.

Guides used in these inspections include Department of Labor Occupational Safety and Health Administration (OSHA) Regulations (Reference 9); Maryland, Virginia and District of Columbia Regulations; Department of Transportation Motor Carrier Safety Regulations (MCSR); National Electrical Code; and the recommended safe practices of the National Safety Council.

4.5.2 EQUIPMENT INSPECTIONS - Tracks and Structure inspections are made by the Track & Structures Maintenance Section of the Office of General Maintenance in accordance with "WMATA Track Maintenance Standards". These track inspections include:

1. Walking inspection by Section Supervisor once each week.
2. Riding inspection by Superintendent twice each week.
3. Ultrasonic inspections by Sperry Rail Service for defects and internal faults three times per year.
4. Gauge and cross level measurements twice each year.

Rapid Transit Car inspections are made by the Car Equipment Section of the Office of Rail Services. These inspections include:

1. Daily Safety Tests (DST) performed on each train.
2. Operator's inspection before each trip
3. Periodic inspections specified by the Metro Transit Car Running Maintenance and Servicing Manual, and the Metro

Transit Car Heavy Repair Maintenance Manual.

4.6 FIRE PROTECTION - The Metrorail System has been designed and constructed to provide an optimum level of fire safety by the selection of fire resistant materials in the stations, facilities, and trains and by the incorporation of standpipes, smoke detectors, fire extinguishers, emergency communications, emergency exits, and emergency ventilation in the design as specified in the "Fire Protection, Equipment, and Life Safety Agreement of August, 1976". APPENDIX D is the "Agreement" that exists between the District of Columbia and WMATA. Identical agreements are in effect with Prince Georges' County and Montgomery County in Maryland, and Arlington County in Virginia.

The Metro Rapid Transit Fire/Rescue Emergency Procedures Policy Agreement (APPENDIX E) established the overall policies to be utilized by the Washington area (D.C., Md., Va.) Fire Departments and WMATA personnel during times of emergency in the Metro System.

Fire/Rescue/Emergency procedures have been developed by WMATA and incorporated into the Standard Operating Procedures (APPENDIX B) and into the Fire/Rescue Operations Procedures Guidelines (APPENDIX F), and they are used for the coordinated WMATA/Fire Department response to emergencies on WMATA Property such as fires, accidents, illness, or attempted suicides that require immediate response of the fire/emergency medical rescue service. Coordinated drills are periodically conducted with the Fire Departments to train the WMATA and Fire Department personnel in using these established procedures.

The Fire Protection Coordinator in the Safety Branch conducts the fire protection training for WMATA and Fire Department personnel in using these established procedures.

The Fire Protection Coordinator in the Safety Branch conducts the fire protection training for WMATA personnel on use of the emergency equipment and procedures. He coordinates the joint training between WMATA and the local fire departments; provides technical fire safety information to other WMATA Offices; and serves as the WMATA/Fire Department liaison.

4.7 ACCIDENT/INCIDENT REPORTING AND INVESTIGATION - All accidents and incidents are reported to the Safety Branch, as described in Section 4.8. All employees having a direct knowledge of an accident or incident must file a written report as required by the Handbook of Rules. The accidents and incidents are investigated by the Office involved and evaluated by the Safety Branch which will conduct additional investigations when required.

4.7.1 INVESTIGATION BY INVOLVED OFFICE - All accident and incident reports are reviewed by the involved office to determine cause, identify corrective actions, and make recommendations to prevent recurrence. The cause, actions, and recommendations are included in the report which is then sent to the Safety Branch.

4.7.2 EVALUATION OF OFFICE REPORT - The Safety Branch evaluates all accident and incident reports to determine any additional actions that are required, to initiate response to any recommendations that require action by departments other than the involved office; and to determine if any additional investigation in accordance with Section 4.7.3 is required.

4.7.3 INVESTIGATION BY SAFETY BRANCH - Additional safety investigations will be conducted whenever a serious accident or safety critical incident occurs on the Metrorail or Metrobus System. These investigations will be conducted by the Safety Branch, or by a Standing Investigation Committee composed of representatives of the Safety Branch, the Office of Rail Services, the Office of Bus Services, and the Office of Equipment Design, and any other offices as required. A typical safety investigation will proceed through the following steps:

(a) An on-site inspection of the accident/incident scene.

(b) Review of reports written by involved personnel.

(c) Interviews with the involved personnel and witnesses.

(d) Review of the following physical evidence. (Rail Only)

  1. Review of Syslog Data. Syslog provides printout of time relationships of train movements/track circuit and signal status/and switch movements.
  2. Communication Tapes
  3. Train Control Room (TCR), Relay Position Data
  4. Train Alarm Tabulation Printout
  5. ATC (Automatic Train Control), Car Equipment, and Trackwork damage reports.

(e) Bus damage reports. (Bus Only)

(f) If information provided by steps (a) through (e) does not provide sufficient information to determine accident/incident cause, a safety test program will be initiated to provide a complete understanding of cause.

(g) A Final Investigation Report will be issued with findings, conclusions, and recommendations.

4.7.3.1 INVESTIGATION OF REPETITIVE EVENTS - When accident/incident reports and statistics show repetitive occurrences that result in an inability to meet or exceed the quantitative Metrorail or Metrobus safety goals that have been established by this plan; the Safety Branch will initiate action to identify,and correct or minimize these problems. The Safety Branch will participate with cognizant offices in the Department of Transit Services, and Design and Construction to determine the required corrective actions. These corrective actions may include equipment modifications, procedural changes, retraining of personnel, and/or more stringent operational, maintenance, or inspection requirements.

4.8 SAFETY DATA - The existence of a complete and accurate safety data base is essential to support a comprehensive safety program, and to to provide the means to establish safety goals and verify attainment of the goals. The safety data base must contain both statistical and qualitative information to allow measurement of safety performance and establish causes for deficiencies so that corrective actions can be taken.

4.8.1 REPORTS SUBMITTED TO THE SAFETY BRANCH - When an accident, incident, or injury occurs, the involved office reports the occurrence to the Safety Branch on one of the following reports:

1. Accident/Injury Report - accidents and injuries occurring to to the public as a result of Metrorail Operations.

2. Incident Report - Incidents, unusual occurrences, irregularities or physical damage to Authority Metrorail property.
3. Summary of Train Operations - submitted by the Metrorail Operations Control Center (OCC) to provide information on trips completed and car mileage that is used to determine actual accident and injury rates that can be compared with the quantitative Metrorail Safety Goals.
4. Command Center Supervisor Report - is used to report unusual occurrences during Metrorail Operations and supplements information contained on the Accident/Injury Reports, and the Incident Reports.
5. BUSV Accident Report - is used to report all Metrobus accidents
6. Employee Injury and Occupational Illness Report - is used to report all on-duty injuries by Metrorail, Metrobus, or other WMATA employees.

SAMPLE COPIES OF THESE REPORTS ARE INCLUDED IN APPENDIX K.

4.8.2 REPORTS ORIGINATED BY THE SAFETY BRANCH - The safety Branch originates the following reports:

(a) Reports Distributed Internally:

1. Rail Passenger Injuries - statistical report used to determine causes of passenger injuries so that corrective action can be initiated.
2. Bus Accidents - statistical report of passenger and collision accidents which provides a comparison of current accident rates and causes with those of previous years so that corrective action decisions can be made.

3. Total Compensation Cases by Year - statistical report used to determine number of employee injuries and their causes
4. OSHA inspection Reports - Safety Inspections are made of all WMATA facilities to report any conditions that endanger the safety and health of employees or the public. Reports are distributed to responsible directors and superintendents so that unsafe conditions will be corrected.

(b) Reports Submitted to Federal Regulatory Agencies

1. Railroad Injury and Illness Summary, Form FRA F 6180-55 - a monthly report required by Federal law.
2. Railroad Equipment Incident Report, Form FRA F6180-54 - a report that must be filed monthly on any rail accident/incident which results in more than $2300 damage.
3. Annual Summary Report of Railroad Injury and Illness, Form FRA F6180-45.
4. Annual Railroad Report of Manhours, Form FRA F1680-56.
5. Log Occupational Injuries and Illnesses, OSHA No. 100

(c) Reports Submitted to APTA Statistical Department

1. Heavy Rail Accident Data Exchange Form
2. Motor Bus Accident Exchange Form
3. Summary All Modes Accident Data Exchange Form

SAMPLE COPIES OF THESE REPORTS ARE INCLUDED IN APPENDIX L.

4.9 LIAISON WITH GOVERNMENT AND OTHER AGENCIES - The Safety Branch coordinates accident investigations with UMTA, FRA, and NTSB when required by law. It coordinates Safety and Systems Assurance Reviews with UMTA/FRA/TSC when these reviews are conducted and it responds to UMTA/FRA TSC recommendations that are made during these reviews. It also responds to requests of Federal OSHA and local OSHA (VA, MD, DC) when required. It represents the Authority on several APTA committees that are currently attempting to improve on the public transit industry's excellent safety record.

4.10 SAFETY AWARDS - The Safety Branch, in conjunction with the Office of Bus Services, conducts an incentive safety award program which provides recognition to drivers who have excellent safety records as shown in APPENDIX M.

5.0 SYSTEM SAFETY PLAN IMPLEMENTATION

5.1 SYSTEM SAFETY DIRECTIVES - Safety is a major concern of WMATA, and it is the responsibility of every employee to ensure the safety of passengers, employees, and others who come in contact with the system. This safety policy has been established by the Board of Directors (Figure 9), which has charged the General Manager with all actions required to implement this directive. The General Manager has directed that all officers and office directors maximize safety by being a strong and positive force in the advocacy of safety.

Further, the General Manager and the Assistant General Manager of Transit Services have directed and empowered the Safety Officer to devise, implement, and administer this System Safety Program Plan and to perform the activities herein to eliminate, control, or minimize unsafe conditions. All WMATA Officers, Office Directors, Superintendents, Supervisors, and Employees shall ensure that all work performed in their area is in accordance with the WMATA Safety Policy. The Safety Branch shall monitor the safety performance of the line organizations and administer and maintain this System Safety Program Plan.

5.2 SAFETY MONITORING, VERIFICATION, AND CORRECTIVE ACTION PROCESS - The WMATA safety monitoring, verification, and corrective action process is shown graphically in Figure 10. It provides a logical approach for (1) identifying hazards, (2) monitoring system performance against the established safety goals, and (3) for taking corrective action to eliminate hazards and to improve

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

SAFETY POLICY

WMATA is an organization totally committed to safety--safety in construction and in operations. It is the Authority's responsibility to the general public to assure them of an organization which is not only innovative but also effectively implementing the highest safety standards. The goal is the effective prosecution of a comprehensive occupational safety and health program which best serves the interests of Metro workers and of the general public. The General Manager is charged with the responsibility for all actions necessary to implement this policy.

BOARD OF DIRECTORS

FIGURE 9

WMATA SAFETY POLICY

safety performance so that performance meets or exceeds the safety goals. It also provides for reporting of status of corrective actions to WMATA management and other groups. This closed loop process enables WMATA to manage and control its safety program.

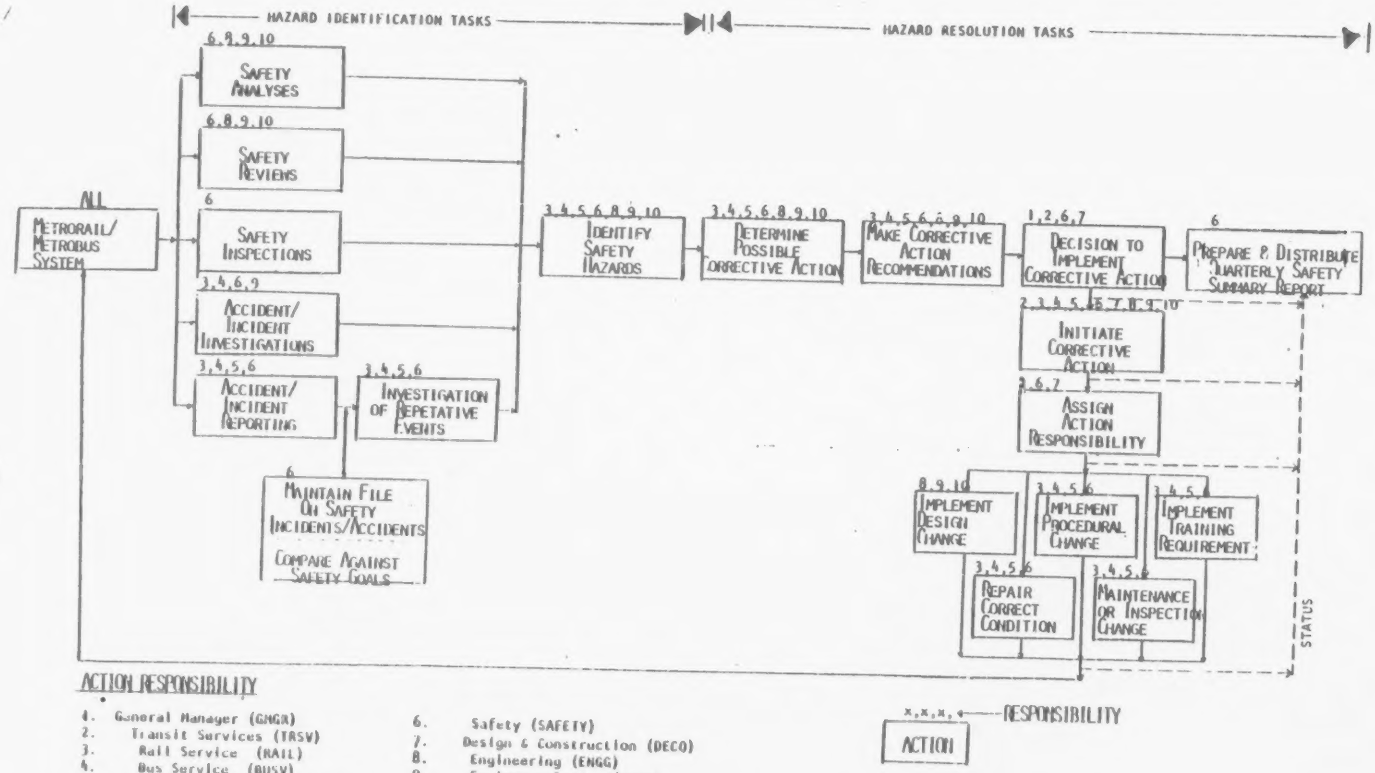
The process provides the means for identification of hazards by performance of the following safety activities:

1. Safety Analyses (Section 4.1)
2. Safety Reviews (Section 4.2)
3. Safety Inspections (Section 4.5)
4. Accident/Incident Investigations (Section 4.7)

Verification of safety performance and implementation of corrective actions to improve system safety are also included in the process. These corrective actions could include:

1. Design Changes
2. Procedural Changes
3. Personnel Retraining
4. Improved Maintenance or Inspection Requirements
5. Equipment or Facility Repair
6. Public Education
7. Disciplinary Action

Provision is also made for assigning responsibility for and scheduling implementation of the actions and a means of monitoring the status of the correction actions.


HAZARD IDENTIFICATION TASKS
HAZARD RESOLUTION TASKS
ALL
METRORAIL/ METROBUS SYSTEM
6,8,9,10
SAFETY ANALYSES
6,8,9,10
SAFETY REVIEWS
6
SAFETY INSPECTIONS
3,4,6,9
ACCIDENT/ INCIDENT INVESTIGATIONS
3,4,5,6
ACCIDENT/ INCIDENT REPORTING
3,4,5,6
INVESTIGATION OF REPETATIVE EVENTS
6
MAINTAIN FILE ON SAFETY INCIDENTS/ACCIDENTS
COMPARE AGAINST SAFETY GOALS
3,4,5,6,8,9,10
IDENTIFY SAFETY HAZARDS
3,4,5,6,8,9,10
DETERMINE POSSIBLE CORRECTIVE ACTION
3,4,5,6,8,9,10
MAKE CORRECTIVE ACTION RECOMMENDATIONS
1,2,6,7
DECISION TO IMPLEMENT CORRECTIVE ACTION
6
PREPARE & DISTRIBUTE QUARTERLY SAFETY SUMMARY REPORT
2,3,4,5,6,7,8,9,10
INITIATE CORRECTIVE ACTION
2,6,7
ASSIGN ACTION RESPONSIBILITY
8,9,10
IMPLEMENT DESIGN CHANGE
3,4,5,6
IMPLEMENT PROCEDURAL CHANGE
3,4,5,6
IMPLEMENT TRAINING REQUIREMENT
3,4,5,6
REPAIR CORRECT CONDITION
3,4,5,6
MAINTENANCE OR INSPECTION CHANGE
STATUS
x,x,x, ← RESPONSIBILITY
ACTION

ACTION RESPONSIBILITY

1. General Manager (GMGR)
2. Transit Services (TRSV)
3. Rail Service (RAIL)
4. Bus Service (BUSV)
5. General Maintenance (GMNT)
6. Safety (SAFETY)
7. Design & Construction (DECO)
8. Engineering (ENGG)
9. Equipment Design (EQMT)
10. Consultants (DCCO, GIBB, HMA, Other)

FIGURE 10 SAFETY MONITORING, VERIFICATION, AND CORRECTIVE ACTION FLOW DIAGRAM

5.2.1 QUARTERLY SAFETY SUMMARY REPORTS - A quarterly cumulative Safety Summary Report will be prepared and distributed to cognizant WMATA personnel. The report will provide a history and status summary of safety problems and hazards and the safety performance data necessary to compare actual safety performance with the established safety goals. The report will also provide information on the status of corrective actions that have been initiated to improve safety.

The quarterly report will consist of the following two sections:

1. Tabulations of all METRORAIL and METROBUS accidents and incidents that have occurred, and accidents/incident rates in terms of (a) traffic accidents per 1,000,000 miles operated, (b) passenger accidents per 1,000,000 passengers carried, and (c) station accidents per 1,000,000 passenger carried; and a comparison of these rates with the goals that were established in Section 1.6.
2. A Hazard Log Summary, as shown in Figure 11, which will provide a listing of hazards that have been identified and the status of the corrective action(s) that have been initiated to eliminate or control the hazards.

HAZARD LOG FOLLOW-UP RECORD

HAZARD #	SUBJECT	DATE REPORTED	STATUS	DATES FOLLOW-UP	ACTION TAKEN	DATE COMPLETED

FIGURE 11 -- SAMPLE HAZARD LOG SUMMARY WORKSHEET

APPENDIX A

LIST OF REFERENCES

1. "Federal Motor Safety Carrier Safety Regulations"; U. S. Department of Transportation Federal Highway Administration.

2. "Handbook of METRORAIL Operating Rules"; Washington Metropolitan Area Transit Authority; October 1975 (Revised September 1977).

3. "METRORAIL Standard Operating Procedures"; Washington Metropolitan Area Transit Authority; November 12, 1976 (Revised September 9, 1977).

4. "METRORAIL General Safety Rules"; Washington Metropolitan Area Transit Authority; March 27, 1976.

5. "Train Operator Course"; Washington Metropolitan Area Transit Authority Rail Training Department.

6. "Train Operator Qualification Course for Revenue Service"; Washington Metropolitan Area Transit Authority Rail Training Department.

7. "Train Operator Refresher Course"; Washington Metropolitan Area Transit Authority Rail Training Department.

8. "Handbook - Rules and Regulations for METROBUS Operators"; Washington Metropolitan Area Transit Authority; April 1975.

9. "Occupational Safety and Health Administration (OSHA) Standards (29CFR1910) - General Industry"; OSHA 2206; U. S. Department of Labor; July 1, 1975 (Revised Janaury 1976).

APPENDIX B

LIST OF METRORAIL STANDARD OPERATING PROCEDURES

The "Standard Operating Procedures" have been promulgated to provide guidance for all employees engaged in emergency and/or abnormal METRORAIL operations. Copies of SOP's have been issued to directors and supervisory personnel in the TRSV Department, and other WMATA Officers as shown by the Distribution List in the SOP Manual. Those supervisors and employees who have been issued complete sets must fully understand the SOP's and their use. All other employees who may be involved in emergency operations must be familiar with those sections of the SOP's that have a direct bearing on the performance of their work. The General Superintendents of RAIL and the Directors of SURE AND GMNT are responsible for conducting refresher training for employees in their organization at least once each year.

The following is a list of the METRORAIL Standard Operating Procedures:

1. Outline of Operation Control Center (OCC) Supervisor's Functions
2. Emergency Removal and Restoration of Third Rail Power Main Line
3. Traction Power Faults.
4. Passenger Evacuation from Trains.
5. Crowd Control At Stations
6. Fire and Smoke on the Right-of-Way
7. Fire and Smoke on Cars
8. Fire and Smoke - Station
9. Train Derailment - Main Line
10. Floods
11. Train Collision - Main Line
12. Collision or Derailment in a Yard

13. Undesired Uncoupling of Cars in a Train
13a. Train Pull Apart
14. Bomb Threats
15. Absolute Block
16. Coupling and Uncoupling Revenue Cars
17. Coupling and Uncoupling Non-Motorized Cars
18. Lost and Found Property
19. Track and Train Control for Testing and Maintenance
20. Emergency Track Switch Release Operation
21. Storm and Snow Operations
22. Derailment Committee
23. Work Train Consist and Operation
24. Sick Passenger on a Train
25. Person Falling to Track
26. Person Hit by a Train
27. Fire Alarm
28. Removal and Restoration of Third Rail Power for WMATA Maintenance Activities - Main Line
29. Blue Flag Protection - Storage and Maintenance Yards
30. Establishment and Removal of a Speed Restriction during Revenue Service - Main Line

APPENDIX C

METRORAIL EMERGENCY EQUIPMENT & EMERGENCY EXITS

Fire extinguishers are stored in the fire equipment cabinets in each station, in the kiosks, at each Emergency Trip Station (ETS) in the tunnel areas, in the operator's cab in each car, and in the various equipment rooms throughout the System. WMATA employees must be familiar with use of the extinguishers and with the location of extinguishers in their work areas.

Emergency Trip Station (ETS)boxes, identified by blue lights, are located at the ends of station platforms and at intervals of not more than 800 feet along the right-of-way to allow removal of third rail power in emergency situations. Telephones are located at each ETS box. The asterisk button (*) on the telephone can be used to activate a direct emergency line to the OCC which takes precedence over all other calls.

Emergency exits, identified by illuminated EXIT signs, are provided at single entry stations and between stations as required. However, it should be remembered that using an emergency exit will normally involve climbing a metal stairway in a 50 to 100 foot high shaft. For this reason, they should normally be considered a secondary means of evacuation to be used only if the primary means of evacuation, as described in the the Standard Operating Procedures, is not possible. Station Attendants, Train Operators, and other WMATA personnel who may be involved in passenger evacuation must know the location of the emergency exits.

The following listed fan/vent shafts contain stairways to the surface and are the emergency exits on the red and blue lines that can be used for passenger evacuation on the Phase I, II, and III METRORAIL System.

RED LINE EMERGENCY EXITS

Emergency Exit	Location	Stationing Marker
Fan Shaft (FA-2)	Between METRO Center & Farragut North	A28 + 76 (OB)
Vent Shaft (VB-6)	Between Judiciary Square & Union Station	B52 + 39

BLUE LINE EMERGENCY EXITS

Emergency Exit	Location	Stationing Marker
Vent Shaft (VC-6)	East End Foggy Bottom	C67 + 18
Vent Shaft (VC-8)	Between Foggy Bottom & Rosslyn	C95 + 34
Fan Shaft (FC-5)	Between Foggy Bottom & Rosslyn	C128 + 00
Vent Shaft (VC-9)	North End Rosslyn	C138 + 75
Fan Shaft (FC-6)	Between Rosslyn & Portal	C158 + 66
Fan Shaft (FC-7)	Between Portal & Pentagon	C234 + 34
Vent Shaft (VC-12)	West End Pentagon	C264 + 50
Vent Shaft (VC-14)	South End Pentagon City	C296 + 77
Fan Shaft (FC-9)	Between Pentagon City & Crystal City	C313 + 28

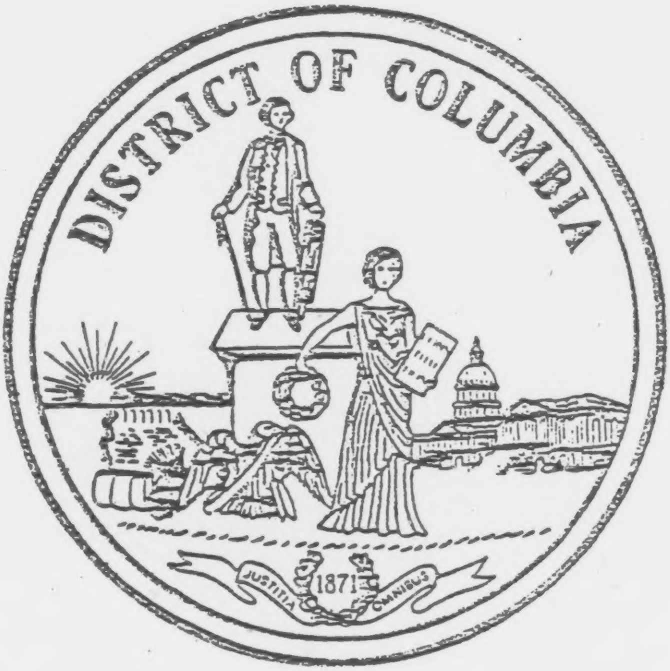
BLUE LINE EMERGENCY EXITS

cont...

Emergency Exit	Location	Stationing Marker
Vent Shaft (VC-16)	East End Crystal City	C338 + 10
Vent Shaft (VD-3)	South End Federal Triangle	D20 + 27
Vent Shaft (VD-9)	East End Federal Center SW	D84 + 50
Fan Shaft (FD-5)	Between Federal Center SW & Capitol South	D94 + 69
Vent Shaft (VD-11)	East End Capitol South	D114 + 87
Fan Shaft (FD-6)	Between Capitol South and Eastern Market	D126 +10
Vent Shaft (VD-13)	East End Eastern Market	D141 + 44
Vent Shaft (VD-14)	West End Potomac Avenue	D167 + 18
Fan Shaft (FD-8)	Between Potomac Avenue & Sadium Armory	D188 + 15

APPENDIX D

FIRE PROTECTION, EQUIPMENT AND LIFE SAFETY AGREEMENT
FOR THE
WASHINGTON METROPOLITAN AREA METRO RAPID RAIL TRANSIT SYSTEM



DISTRICT OF COLUMBIA

COOPERATIVE AGREEMENT NO. MA-075
BETWEEN
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
AND
THE DISTRICT OF COLUMBIA

THIS COOPERATIVE AGREEMENT, made and entered into this 19 day of November, 1976 by and between the DISTRICT OF COLUMBIA acting by and through its CHIEF ADMINISTRATIVE OFFICER, and the WASHINGTON METROPOLITA AREA TRANSIT AUTHORITY, acting by and through its General Manager.

WITNESSETH:

WHEREAS, The DISTRICT OF COLUMBIA and the Authority have agreed to cooperate in the development of a rapid rail system in the District of Columbia; and

WHEREAS, local codes were not enacted with the special circumstances of a rapid rail transit system in mind and therefore some sections of these codes do not provide necessary special provisions for such a syste and lack other necessary measures for the protection of the public healt safety and welfare from the special conditions of such a system; and

WHEREAS, a METRO Fire Safety Technical Committee was established between representatives from the Transit Authority and the local jurisdictions to determine the equipment and facilities needed for the Fire/Rescue Service; and

WHEREAS, the provisions hereafter stated shall supersede any provisions of previous agreements in conflict with these provisions; and

WHEREAS, a separate agreement on Metro related standard and emergenc fire, rescue, and emergency medical rescue service procedures will be formulated, and

WHEREAS, the provisions of this agreement may be amended or added to subject to the approval of the parties, the parties to this agreement shall meet at least on an annual basis from the date of the signing of this agreement until a period of one (1) year after completion of construction and every five (5) years thereafter or at any time the need exists to review and amend the agreement; and

WHEREAS, it is not the intention of this Agreement to address the fire/life safety of the Metro Transit rail cars;

NOW THEREFORE, the parties hereto mutually agree as follows:

To a Master Agreement dated November 19, 1976, titled, "Fire Protection Equipment and Life Safety Agreement", as hereinafter stated:

FIRE PROTECTION EQUIPMENT AND LIFE SAFETY EQUIPMENT AGREEMENT

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1. DEFINITIONS

a. Approved:

Means acceptable to the Fire authority having jurisdiction. In determining the acceptability of installations of procedures, equipment or materials, the authority having jurisdiction may base acceptance on compliance with appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedures or use. The authority having jurisdiction may also refer to the listings or labeling practices of nationally recognized testing laboratories, i.e., laboratories qualified and equipped to conduct the necessary tests and qualified to determine compliance with appropriate standards for the current production of listed items, and the satisfactory performance of such equipment or materials in actual usage.

b. Listed:

Equipment or materials to which has been attached a label of a nationally recognized testing laboratory that maintains periodic inspection or production of listed equipment or materials, and whose listing states either that the equipment or materials meet nationally recognized standards or has been tested and found suitable for use in a specific manner.

c. Labeled:

Equipment or materials to which has been attached a label of a nationally recognized testing laboratory that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling is indicated compliance with nationally recognized standards or the conduct of tests to determine suitable usage in a specific manner.

d. Authority Having Jurisdiction:

The fire department organization, office or individual responsible for "approving" equipment, an installation, or a procedure.

e. Dedicated Emergency Capability:

A direct telephone line that's sole function is to connect the Command Center with the fire/rescue communications centers of local jurisdictions.

f. Exposed Fire Line:

The portions of the standpipe which would not be protected from mechanical injury.

g. Predetermined Level:

Ionization sensors have the capability to be adjusted to conform to the atmospheric conditions in which they will be used. The sensors installed in the METRO System will be field adjusted to the most sensitive point possible which will not result in false alarms from ambient particles.

h. Standpipe Fire Hose Connection:

Consists of an approved 2-1/2 inch globe valve with a 2-1/2 inch threaded (NH) male connection and blind cap.

i. Command Center:

Refers to the WMATA facility which will monitor and supervise the operation of the entire rapid rail transit system.

j. Dry Standpipe:

A standpipe having no connection to a permanent water supply and provided for use by fire departments who will supply water under pressure for fire fighting from fire department pumpers. However, dry standpipes will normally be kept filled with water.

k. Exit Unit:

Means of egress shall be measured in units of 22 inches. Fractions of a unit shall not be counted except that 12 inches added to one or more full units shall be counted as 1/2 a unit of exit width.

l. Class A Interior Finish:

Includes any material having a flame spread rating classified as 25 or less when tested by approved test methods. Any element thereof when so tested shall not continue to propagate fire.

2. FIRE ALARM SYSTEM

The METRO System Fire Alarm shall be a "Proprietary Protection Signaling System," Class "A", based upon the NFPA Standard 72D, 1973, and the National Electric Code, 1975.

Transit stations shall be provided with a fire alarm control panel equipped with a minimum of seven (7) separate fire zone circuits. All the fire sensors in a given zone will be in close physical proximity to each other so that the activation of an alarm can be associated with a specific area in the station. A separate zone shall be established for the monitoring of fire water valves and water flow when applicable.

a. The following two (2) types of fire detector sensors shall be used:

(1) Ionization detector sensor.

The sensor shall be activated whenever the combustion particles in the area increase to a predetermined level.

(2) Combined fixed temperature and rate-of-rise sensors:

The sensor shall respond to a rate-of-rise of temperature and fixed temperature conditions, and will activate an alarm on an annunciation panel. (Example: temperature rises at a rate of 15°F per minute or reaches a point of 136° F).

Typical distribtuion of the two (2) types of sensor is illustrated in the following table:

ROOMS	Rate of Rise Fixed Temperature Sensors	Ionization Sensors
AC Switchboard	X	X
Battery	X	X
Bell System	X	X
Chilled Water Plant	X	X
Communication	X	X
D.C. Breaker Room	X	X
Escalator Machine Room and Pit	X	--
Mechanical Equipment	X	X
Men's Lavatory	X	--
Operations	X	--
Porter-Cleaner	X	--
Pumping Station	X	--
Substation	X	--
Tie-Breaker Station	X	X
Train Control	X	X
Water Service	X	--
Women's Lavatory	X	--
Station Recirculation Air Intakes	--	--
Unfiltered Side of Air Handling Units	--	X

In those rooms in which both combination rate-of-rise and fixed temperature detector sensors and ionization detector sensors are indicated, the two types shall be mounted within 6 inches of each other and the interconnecting wiring shall be protected in rigid conduit.

The kiosk attendants, by performing a single function, will have the ability to initiate a fire alarm from the kiosk. The kiosk alarm will activate the same control functions as any other fire alarm.

b. The following control functions shall be automatically initiated by station fire alarm systems:

When any fire detector sensor in the fire alarm system is activated:

(1) All station escalators traveling from the outside to the mezzanine level shall, after a preset time delay and warning announcement, stop, to prevent passengers from entering the station. This shall not circumvent the normal immediate stopping of the escalators, if an escalator safety device is actuated.

(2) The passenger control arms on the fare collection aisles shall remain open to permit unimpeded egress from the station.

c. When an ionization sensor in any air conditioning unit is activated, all air conditioning units in that zone shall stop except the fresh air exhaust unit in the station which will remain under control of Command Center for smoke control.

Two manual emergency voice alarm reporting devices will be required on the passenger platforms unless specifically waived by the authority having jurisdiction.

In lieu of local fire alarm bells to alert the occupants that the fire alarm has been activated, presignaling to the kiosks shall be used and the appropriate announcements shall be made over the public address (PA) system. The station kiosk and Command Center shall both be capable of transmitting information over the PA system. This method of alerting the occupants offers the best method of control and minimizes the danger of panic. The kiosk attendant will have visibility of the public areas, either directly or by closed circuit TV monitors.

A kiosk(s) in each station shall be equipped with a fire alarm annunciator panel that shall announce by audible alarm the activation of any fire sensor and display visually the fire zone affected. Simultaneously, an alarm shall be transmitted to the Command Center via the Data Transmission System (DTS). The alarm shall remain active until manually reset at the annunciator panel. The system shall be electrically supervised so that the occurrence of a break or ground in the wiring or a power supply malfunction will be alarmed by a distinctive signal on the kiosk annunciator alarm. The Command Center shall be manned on a continuous basis and shall be equipped with direct dedicated emergency lines to the local governments' fire department communication centers. The appropriate fire department must be notified immediately upon receipt of an alarm.

Visual/Audible Fire Alarm Systems (described under Communications System).

a. TV Surveillance System.

b. Telephone System.

c. Radio System.

d. Public Address System.

3. COMMUNICATION SYSTEM

a. TV Surveillance System:

The passenger stations shall be equipped with CCTV surveillance equipment to cover the principal areas of platforms, mezzanines, escalators and main passageways within a station, providing coverage of approximately 90%. The station kiosk shall be equipped with a coordinated console of TV monitors.

b. Telephone System:

A telephone system with a dedicated emergency capability shall be installed to provide direct communications to Command Center. Telephones shall be provided in the station kiosks, ends of station platforms, and at intervals not to exceed 825 feet between stations. The locations of telephones at the ends of the station platforms (ancillary area) and between stations shall be made distinguishable by installing a blue light above them. Command Center shall have a console with direct dedicated emergency lines to the local governments' fire department communications centers.

c. Radio System:

The radio system will also be capable of providing communications between the Command Center and train attendants, maintenance, operations and security personnel, most of which will generally have portable radios. An antenna system shall extend throughout the entire underground section of the subway system for radio communications.

A communications system which permits Fire Department communication from portable radio to portable radio within the METRO station and tunnels, and from portable radios within the stations and tunnels to portable/mobile radios on the surface shall be required. Radios will be provided by the fire departments for their own use.

d. Public Address System:

A public address system shall be installed in each station and transit car to provide direct communications to the passengers. In the event of a fire or other emergency situations, the PA system shall be capable of providing instructions from (1) Command Center to train attendants and to passengers in the stations, (2) kiosk attendant to passengers in the stations, and (3) train attendant to passengers within the train.

A device capable of alerting the station occupants to emergency conditions in the station over the public address system shall be provided. This device shall automatically activate upon receipt of a fire detector signal after a delay not to exceed two minutes, or immediately upon manual activation by the station attendant.

4. VENTILATION SYSTEMS FOR EMERGENCY SMOKE CONTROL

a. Tunnel Ventilation:

The general arrangement of tunnel ventilation facilities shall include a gravity ventilation shaft at each end of each station within approximately 100 feet of each end of the station platform. These vents normally serve to relieve the air-blast caused by train piston action. A power operated reversible mid-tunnel ventilation fan, in a fan shaft, shall be located approximately midway between stations. Normally, the powered fans in tunnels will operate in the exhaust mode in automatic response to rising tunnel temperatures. During an emergency, the Command Center shall be capable of controlling the fans to blow air in either direction for smoke and heat control. The dampers inside the vent shafts shall close when the fans are in emergency mode to permit the tunnel's fans to exhaust air from stations, or when fans are on reverse (supply) mode, to pressurize the station. Local controls are provided within the fan shaft structure, near the fans, for maintenance purposes. The procedures agreement will detail the mandatory use and modes of these local controls.

b. Subway Station Ventilation:

The stations shall have a separate power-operated reversible ventilation system. Dome reliefs will open in the top of the station vault whenever the fans operate. The fans shall normally operate under the thermostatic control to remove the heat generated by train equipment. Under emergency conditions the fans will have the capability of being controlled remotely from the Command Center to exhaust smoke or to pressurize the station venting smoke through the dome reliefs at street level. These fans have the same type of local control as the "Tunnel Ventilation" fans.

c. Summary:

The ventilation system described above shall be capable of pressurizing the escalator-ways and stations in such a manner as to prevent smoke from entering the mezzanines and platforms. They shall also be capable of putting a suction pressure on the station for removal of smoke via the tunnels and/or via the exhaust system under the station platform.*

5. ELECTRICAL SYSTEM

All electrical wiring shall be of high reliability conforming to National Electric Code (NEC), 1975 or the code in effect at the time of final design approval. The passenger station power shall be supplied through two feeders from separate utility company substation or independent buses at the same substation. Should one feeder fail, there shall be an automatic tie-breaker transfer of essential loads to the other feeder. Each feeder shall serve one transformer, which in turn will service some of the equipment. If a feeder fails, the nonessential loads, such as air conditioning and heating, and some escalators, shall be disconnected and the essential loads, such as lighting, signs and communications will be supplied immediately from the other feeder. Should both feeders fail, emergency lighting in the tunnel, Subsurface station, and underground facilities and exits, and also communications shall be fed from a battery system with a three-hour capacity and 90 minute capacity in all other areas. The batteries shall be recharged automatically from the main feeders and will be checked and maintained at regular periods. Also, battery rooms will be equipped with a ventilation system capable of exhausting all gases to the outside produced during battery charging operation.

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*The following stations will have a supply mode (non-reversible) capability and no under platform exhaust system: Union Station, Judiciary Square, Gallery Place, METRO Center, Farragut North and Foggy Bottom.

The transformers for the passenger stations shall be located in AC switchboard rooms, which shall have forced air ventilation. They shall be dry type for 13.8 KV input and askaral filled for 34.5 KV input. On no occasion will transformers used within the stations be cooled with a flammable material. The switchboards shall be free-standing, metal enclosed, with air or vacuum breakers and shall be adequate to meet the full short circuit capacity required by the utility company. All incoming services shall have appropriate protection relays and all substations and electrical equipment shall be properly grounded.

The traction power supply shall be supplied from two separate utility substations or two separate buses. Underground transformers shall be askaral filled (non-flammable) with drainage to a closed tank. Underground substations shall be forced-air ventilated. The ambient temperature of all electrical equipment rooms shall not exceed 105° F.

The trip stations, from which the traction power in the contact rail can be disconnected, shall be located at the ends of the station platforms and spaced at intervals not to exceed 825 feet between passenger stations. Command Center shall also have the capability of removing the power from the contact rail. Each trip station shall be identified by a blue light connected to the emergency electrical system. After the power has been disconnected from the contact rail, a definite procedure shall be followed to restore the power so as to protect the people involved, as established in the Procedures Agreement.

Grounded electrical convenience outlets shall be placed approximately every 80 feet in the underground portions of the system.

6. CONSTRUCTION

The passenger stations shall be constructed of noncombustible materials having a fire rating of at least two hours, and interior finish of all public areas shall be of class A materials. There shall be a two-hour separation between all ancillary areas and public areas, and two-hour separation between specific rooms in the ancillary areas will be provided if required by local code.

All doorways between ancillary rooms and public areas shall be protected using a listed metal class B fire door (1-1/2 hour fire rating). Listed closer, latches, and frames compatible for use with the class B doors shall also be installed and maintained.

For construction with two-hour fire rating, sprinklers are not required except that in single-entry stations, an automatic fire suppression system shall be installed in the moving stairway, between the outside and mezzanine landings. Automatic sprinklers or other acceptable fire suppression means are required in ancillary rooms where combustibles are stored. Automatic sprinklers, or other acceptable fire suppression means on a light hazard schedule, shall be required in the event of introduction of concession facilities or other accumulations of combustibles in public areas. Determination of the above need for automatic sprinklers or other acceptable fire suppression means shall be made by the fire officials having jurisdiction.

All the acoustical and insulation materials used within a station or tunnel shall have a flame-spread classification not to exceed 25 and a smoke developed and fuel contributed rating not to exceed 50, as measured by ASTM E84-68.

No structure shall be connected to the subsurface METRO system unless:

a. A two-hour separation between the two is achieved in a manner approved by the local authority having jurisdiction.

b. Provisions are made which will restrict, as much as possible, any smoke migration, between structures, which may originate from either the METRO system or an attached structure. Such provisions shall be of a type or manner approved by the local authority having jurisdiction.

No enclosed connection between METRO facilities and buildings or structures lacking complete automatic sprinkler protection shall be made unless prior approval is obtained from the fire official having jurisdiction.

To lessen the possibility of spilled flammable liquids entering METRO tunnels, there shall be no grates for fan/vent shafts or dome relief vents terminating in vehicular travelways (the only exception shall be two pre-existing vent shafts associated with the Farragut North Station, Seventeenth and K Streets, N.W. and the Rosslyn Station, Wilson Boulevard and North Lynn Street).

7. EXITWAY

In a subsurface station, the distance to an exit shall not exceed 500 feet. In addition to the normal passenger exits in subsurface stations, an emergency exit shall be provided in certain shafts so that no point in the subway system shall be over 1,250 feet from a point of access or egress unless waived by the authority having jurisdiction. Exceptions either designed, under construction or built at the time of signing of this document shall be allowed and are located as follows (all distances are the travel distance to an exit): (1) C Route VS -C-8 to FS C-5, 1558 feet, between Foggy Bottom Station in the District of Columbia and Rosslyn Station in Arlington, Virginia; (2) E Route VS E-9 to FS E-5, 1375 feet between Columbia Heights and Georgia Avenue Stations in the District of Columbia; (3) G Route FS G 1 to VS G-1, 1350 feet between Stadium-Armory and Benning Road Stations in the District of Columbia; and (4) L Route FS F-3 to Portal, 1604 feet, between L'Enfant Plaza Station and the Potomac River in the District of Columbia.

Emergency vent/fan shaft stairways and exits shall not terminate at the surface in vehicular traffic-ways.

In single entry underground stations, an emergency exit shall be provided in one vent shaft, furthest from station entrance. In vent shafts, other than the ones used for emergency exits, the vertical ladders will be offset with protected landings at 20 foot intervals to be used by maintenance personnel and emergency personnel. In event of an emergency, the tunnels adjacent to the underground stations and the adjoining rights-of-way for surface stations shall be considered as another means of egress. The tunnel shall be illuminated by battery operated emergency lighting system if all the normal power, which is supplied from two different sources is cut off. Emergency lighting fixtures shall be spaced at intervals of approximately 160 feet in tunnels.

Travel between levels within a station and to the outside shall be provided by an unenclosed moving stairway or stairs. The moving stairways shall be capable of operating in either direction. Controls capable of stopping the escalators shall be installed at the upper and lower moving stairway newels. The attendants shall have controls available in the kiosk to stop the moving stairways. The moving stairways will operate at a maximum speed of 125 feet per minute, unless a higher speed is approved by local government officials.

The Automatic Fare Collecting System shall have a minimum aisle width of 19 inches so as not to present any physical impediment to the safe and rapid passage of people through the aisles. In the event of a power failure, or activation of the fire-alarm systems, or manual activation of the attendant emergency control switch, all of the fare aisles in a given mezzanine complex will go into unlocked barrier-free mode of operation, and passenger movement through the fare aisles shall not be impeded.

In addition to the fare aisles, each mezzanine shall have hinged service exit gates equipped with panic hardware. The total number of exit units (service gates and fare aisles) shall be equal to or greater than the number of exit units from the platform to mezzanine level. The minimum width of a service gate shall not be less than 34 inches.

On surface lines, sliding access gates in fences shall be provided at intervals not to exceed 825 feet.

Principal passenger station entrances and exits that are clearly visible are not required to have illuminated exit signs and/or directional signs. In special cases, emergency illuminated exit signs and/or directional signs will be placed in transit stations after consultation with the local authority having jurisdiction. Those fan and vent shafts designated as emergency exits shall be equipped with an illuminated exit light. In single entry stations, there shall be an illuminated exit light that shall be located at the end of the platform in tunnel nearest the emergency exit vent shaft. (NOTE: The gate that will be located under this exit light shall swing in either direction to accommodate passengers exiting from tunnel into station and from station into tunnel). All exit lights shall conform to the specifications set forth by local codes.

Standard exit lights shall not be required for the length of the tunnels. However, durable signs indicating the distance to the nearest point of exit in both directions, and identification of the nearest station in each direction, shall be placed along the tunnel walls in proximity to each emergency light.

8. FIREFIGHTING FACILITIES

a. Fire Equipment Cabinet (FEC):

Fire equipment cabinets shall be located on the station mezzanine level and both platform ends of underground stations and at one platform end of surface stations. Each fire equipment cabinet shall include:

(1) Four inch standpipe with 2-1/2 inch (NH) valve for fire department hose.

(2) ABC dry chemical fire extinguishers with a minimum 2-A:10 BC UL rating.

(3) Stretcher (1) per platform.

b. Fire Extinguishers:

In addition to those in the fire equipment cabinets, portable fire extinguishers, ABC dry chemical, minimum 2-A: 10-BC UL rating, shall be located in, but not limited to, station kiosks, train control rooms, communication rooms, mechanical equipment rooms, electrical rooms, fan shafts, trip stations, and passenger cars.

c. Fire Standpipe Lines for Subway Stations:

(1) A 4 inch wet fire standpipe line connected to the municipal water system shall be located under the platforms.

(2) All main fire standpipe line supply valves shall be indicating type and supervised with tamper switches. They will be connected to the station fire alarm system.

(3) Two and one-half inch fire department connections shall be located in each fire equipment cabinet and at 200 foot intervals along the platform.

(4) Access to fire department connections under the platform shall be through manholes marked STANDPIPE.

(5) A siamese connection shall be located near the station entrance and within 100 feet of vehicular access.

(6) A dry vertical pipe with a ball drip valve shall connect, through a check valve, the siamese and the wet standpipe.

(7) In the case of two-level stations, there shall be a pipe (minimum size 4 inches) interconnecting the two horizontal standpipes so that charging any siamese connection will provide water for fire fighting to every part of the station.

d. Fire Standpipe Lines for Surface Stations:

(1) A dry standpipe shall be provided for all surface stations, the design of which shall be in general conformance with NFPA Standards 14, 1973, or of the latest edition.

(2) Minimum pipe size shall be four (4) inches and capable of flowing 500 gallons per minute.

(3) The siamese connection shall be located near the station entrance, within 100 feet of vehicular access, and marked DRY STANDPIPE.

(4) Two and one-half (2-1/2) inch fire department connections shall be located in fire equipment cabinets and under the platform at 200 foot intervals with a connection within 100 feet of each end of the platform.

NOTE: The need for a standpipe under the platform shall be determined by the authority having jurisdiction.

(5) Access to fire department connections under the platform shall be through manholes marked STANDPIPE.

(6) In the case of two-level stations, there shall be a pipe (minimum pipe size four (4) inches) interconnecting the two horizontal standpipes so that charging any siamese connection will provide water for fire fighting to every part of the station.

(7) The dry standpipe shall have automatic and manual drains.

e. Fire Lines in Vent/Fan Shafts and Tunnels:

Standpipes of an approved design shall be provided in the tunnels. The system will generally be in the configuration of an inverted "T" with the vertical leg of the "T" being in a fan/vent shaft or other entry from the surface and the crossbar being in the tunnel. The horizontal section of the pipe will extend from the "T" in both directions along the tunnel to a point within approximately 200 feet of a standpipe coming from the other direction or a fire equipment cabinet at a station. Fire department hose connections with 2-1/2 inch threads (NH) shall be located at intervals not to exceed 200 feet in the tunnels with valve handles painted red, and identified as to fire line section.

The siamese connection shall be installed on the surface at a height of between 18 and 36 inches above the finished grade level. Where this type of installation is not possible due to pedestrian or vehicular travel, the authority having jurisdiction may approve a siamese connection located just under the surface of the grate, as near to the shaft wall as possible, and accessible through a hatch.

An approved type of inline cut-off valve shall be installed in horizontal fire lines near the "T" junction to permit segregating each branch of the line.

The horizontal portion of standpipes shall be filled with water and precautions against freezing shall be taken if necessary. The pipes shall be filled by local fire department pumpers and manpower initially, after each use, and after testing.

Where a siamese connection is located more than 500 feet from a municipal fire hydrant, the jurisdiction involved will be responsible for providing an additional hydrant within 500 feet of the standpipe siamese connection.

The standpipe system shall be designated for Class 1 service, i.e., for use by fire departments and those trained in handling heavy water streams (2-1/2-inch hose).

Each siamese connection (at the surface) shall be provided with a conspicuous, durable and permanently legible sign reading "ACCESS TO DRY STANDPIPE" with the METRO logo embossed below, and the total length of the vertical and horizontal pipe, and an identification symbol for the section.

During the construction phase, all contractors shall submit to WMATA a fire protection plan, which shall be subject to the approval of the authority having jurisdiction. This plan shall include provisions for fire protection systems and equipment as required by OSHA, Safety and Health Regulations for Construction, Subpart F - Fire Protection and Prevention.

All METRO standpipe systems shall be designated in general accordance with NFPA Standard 14, 1973. The following shall apply specifically:

(1) Minimum size line - 4 inch, with a design flow capacity of 500 gallons per minute at 100 pounds per square inch at the last hose connection at the end of the line. This capacity is based upon a pressure of 200 psi delivered at the siamese

(2) Maximum working pressure in lines when charged shall be 200 psi.

(3) Periodic inspection by METRO and fire department personnel shall be performed.

f. Fire Hydrants:

Surface stations and parking lots may be required to have fire hydrants, as designated by the local authority having jurisdiction. In no event shall the nearest municipal fire hydrant be located further than 500 feet from the station. Fire hydrants located in public property shall be provided by the local jurisdiction.

9. EXISTING FEDERAL, STATE AND LOCAL ORDINANCES, STATUTES AND REGULATIONS

Should it be determined that Federal, State and/or Local statutes, ordinances or regulations not specifically addressed in this agreement are in conflict with this agreement, the responsible agency having jurisdiction shall notify the Transit Authority to this effect and take steps to insure that action is taken most consistent with existing statutes, ordinances and regulations, and the spirit of this agreement.

The signature indicates the recommendations of the Fire Chief for ratification of this Agreement by the District of Columbia and the Washington Metropolitan Area Transit Authority.

SEP 3 1976
(Signature) (Date)

Burton W. Johnson
Fire Chief
District of Columbia

IN WITNESS WHEREOF, the parties have executed the agreement as of the date entered herein.

District of Columbia :

ATTEST:

Martin K. Schaller
CLERK
EXECUTIVE SECRETARY, D. C.

CHIEF ADMINISTRATIVE OFFICER
DISTRICT OF COLUMBIA

DATE: JANUARY 14, 1977

FOR THE AUTHORITY:

ATTEST:

SECRETARY
WASHINGTON METROPOLITAN AREA
TRANSIT AUTHORITY (WMATA)

APPROVED:

GENERAL MANAGER
WASHINGTON METROPOLITAN AREA
TRANSIT AUTHORITY (WMATA)
11/19/76

APPENDIX E

METRO RAPID RAIL TRANSIT FIRE/RESCUE
EMERGENCY PROCEDURES POLICY
AGREEMENT

WASHINGTON
AREA
VA
MD
DC
FIRE
DEPARTMENTS

MAY
1976

METRO RAPID RAIL TRANSIT FIRE/RESCUE

EMERGENCY PROCEDURES POLICY

I. PURPOSE

To provide a ready source of information outlining the overall policies utilized in implementating emergency operations procedures in order to insure the safety of the passengers, WMATA and fire personnel during emergencies involving the METRO Rapid Rail Transit System.

These general policies are not intended to serve as operating procedures for WMATA or fire/rescue personnel. The overall policies described herein can only be implemented through the use of related specific, detailed operational procedures developed by WMATA and each relevant fire/rescue service agency for METRO Rapid Rail emergency incidents.

II. DEFINITION

"Emergency" - For the purpose of these procedure policies, the word emergency will be defined to mean, any abnormal situation or incident affecting WMATA property, personnel, or passengers in or on WMATA property, such as fires, accidents, illness or attempted suicides, requiring the immediate response of the fire/emergency medical rescue service.

III. PARTICIPANTS

A. Transit System:

1. In the Washington metropolitan area, mass rapid rail and bus service is provided by the Washington Metropolitan Area Transit Authority (WMATA).

2. WMATA presently provides mass transit bus service, and an increasing number of miles of rapid rail transit service, within the Washington Metropolitan Transit Zone which consists of the District of Columbia, the cities of Alexandria, Falls Church, Fairfax, and the counties of Arlington Fairfax in the Commonwealth of Virginia; and the counties of Prince George's and Montgomery in the State of Maryland.

B. Fire/Rescue Service

1. In the Washington metropolitan area, fire/rescue service is provided by the individual jurisdiction involved in the Washington Metropolitan Transit Zone.

2. The fire/rescue services are provided by Professional personnel in the District of Columbia and a combination of Professional and Volunteer personnel in other jurisdictions within the Transit Zone.

IV. PROCEDURES POLICY

A. NOTIFICATION

UPON NOTIFICATION OF AN EMERGENCY, WMATA, THROUGH ITS CONTROL CENTER WILL IMMEDIATELY NOTIFY THE JURISDICTIONAL FIRE/RESCUE SERVICE OR SERVICES RESPONSIBLE FOR TAKING CORRECTIVE ACTON.

1. Once WMATA has contacted the relevant fire/rescue service(s) with the initial notification of an emergency,WMATA through its Control Center will evaluate the incident in the shortest possible time and relay all pertinent information to the fire/rescue service(s) concerned.

2. Upon notification of an emergency in the WMATA system, from a source other than the WMATA Control Center, the Fire/Rescue Communication Center will immediately notify WMATA Control Center for the purpose of alerting and verification.

3. In-service Call- Back Contingency

   In the event that WMATA Control Center recieves information that fire/rescue personnel are not actually needed, before dispatched personnel and equipment reach the scene of the reported emergency, the Control Center will notify the dispatching Fire/Rescue Communications Center immediately, In this contingency, the first due unit should continue to the scene to verify the non-emergency status of the situation and return to service the remaining units.

B. FIRE/RESCUE EMERGENCY RESPONSE

UPON NOTIFICATION OF AN EMERGENCY WITHIN THE WMATA SYSTEM THE FIRE/RESCUE SERVICE SHALL RESPOND TO THE REQUEST FOR EMERGENCY SERVICE.

1. Jurisdictional fire/rescue services,with METRO emergency responsibilities,should coordinate service activities and response procedures to assure adequate manpower and equipment responses to METRO Rapid Rail emergencies.

2. Where fire/rescue jurisdictions share a common boundary crossed by the METRO Rapid Rail Service, the adjoining jurisdictions will coordinate METRO emergency response procedures, minimum manning and equipment levels of response relative to the portion of the METRO system served by both jurisdictions.

C. COMMAND AND CONTROL

THE FIRE/RESCUE SERVICE SUPERVISOR AT THE SCENE OF AN EMERGENCY INVOLVING THE WMATA SYSTEM WILL ASSUME OVERALL COMMAND OF THE EMERGENCY.

1. The fire/rescue official of the first arriving company or unit will assume control and responsibility for the incident. The fire/rescue service will maintain control of the incident until the conditions have been alleviated.
2. A WMATA supervisor will be directly assigned to all emergencies and will coordinate the activities between the fire/rescue service and WMATA employees.
3. Assigned WMATA personnel will assist the fire/rescue personnel with manpower and equipment under the direction of the supervising fire official.
4. At the conclusion of an emergency, the supervising fire/rescue official will officially clear the scene, and authorize the designated WMATA supervisor to place the system back into operation.

D. DE-ACTIVATION AND RE-ACTIVATION OF THIRD RAIL POWER

THE WMATA CONTROL CENTER WILL REMOVE POWER FROM THE THIRD RAIL WHEN REQUESTED TO DO SO BY THE FIRE/RESCUE SERVICE.

1. Fire/rescue personnel will not be permitted to operate in the track bed area unless assured that the third rail power has been removed.
2. Fire/rescue personnel should not remove power at the "Blue Light" station before notifying the WMATA Control Center. The Control Center should be allowed time to safely position trains in the area before power removal.
3. In an emergency situation, the WMATA Control Center may request but may not re-activate third rail power unless specifically authorized by the on-scene fire/rescue supervisor.
4. Non-emergency re-activation of the third rail will be conducted by WMATA employees after the fire/rescue service has officially cleared the scene.

E. RAIL CAR MOVEMENT AND EVACUATION

UPON NOTIFICATION OF AN EMERGENCY AFFECTING RAIL OPERATIONS, WMATA CONTROL CENTER WILL STOP ALL TRAINS IN THE AFFECTED AREA AT THE NEAREST STATION OR WILL REROUTE THEM OUT OF THE AREA, IF PRACTICABLE.

1. When rail service is interrupted during an emergency

requiring the discharge of passengers from railcars, every attempt will be made to move the train to the nearest station before discharging passengers. The discharge of passengers from trains to the track bed will only be executed when other alternatives are not available.

2. A fire or smoke condition on a train will require that the operator attempt to bring the affected train into a station. However, if operating on the surface, the operator shall not enter a tunnel to reach a station.

3. At any time rail passengers must be discharged to a track bed, WMATA will consider the situation as an emergency condition and notify the fire/rescue service concerned immediately for assistance.

4. The WMATA Control Center will advise the relevent fire/rescue service communication center and fire/rescue personnel on the scene of an emergency of any change in status of car evacuation or train movement within the affected area.

These signatures indicate the agreed to Emergency Policy Procedures of the Fire/Rescue Services and the Washington Metropolitan Area Transit Authority.

Frank P. Briguglio, Prince George's County, Maryland

William Brown, Alexandria, Virginia

David B. Gratz, Montgomery County, Maryland

Robert Groshon, Arlington County, Virginia

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George W. Alexander, Fairfax County, Virginia
Chairman, Fire Chiefs Committee

Ralph L. Wood

Ralph L. Wood, Chief
Operations and Maintenance
Washington Metropolitan Area
Transit Authority

APPENDIX F

METRO RAPID RAIL TRANSIT FIRE/RESCUE
OPERATIONS PROCEDURES
GUIDELINES

M
metro
WASHINGTON
AREA
VA
MD
DC
FIRE
DEPARTMENTS

AUGUST
1977

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GUIDELINES FOR GENERAL FIRE/LIFE OPERATIONS PROCEDURES

I. PURPOSE

The following section provides some basic information which will be useful in the adoption of general METRO procedures by individual fire/rescue jurisdictions.

II. DEFINITIONS

The following related concepts and documents are defined as they relate to these procedures.

"Emergency"

Emergency will be defined as, any abnormal situation or incident affecting WMATA property, personnel or passengers in or on WMATA property such as fires, accidents, illness, or attempted suicides, requiring immediate response of the fire/emergency medical rescue service.

"Fire Protection Equipment and Life Safety Agreement"

The equipment and design concept necessary to provide for fire/life safety during times of emergency within METRO rapid rail systems (i.e., standpipe system, smoke detection) are established in this agreement between WMATA and individual fire/rescue jurisdictions.

The "Agreement" was developed by the regional fire services and WMATA personnel to ensure necessary and reliable equipment will be available during emergency conditions.

"Fire/Rescue Technical Information Package"

The descriptive information of technical items and terminology established in this document was developed to give basic information and description of the construction and the equipment used in the operation of METRO Rapid Rail Transit System.

"METRO Rapid Rail Transit Fire/Rescue Emergency Procedures Policy Agreement" of May, 1976

The "Policy Agreement" established the overall policies to be utilized by fire/rescue personnel and WMATA personnel during times of emergency in the METRO System. The Policy Agreement also provides the organizational framework and rationale for many of the basic METRO fire/rescue operational procedures described herein. In each section of this document where a specific policy procedure applies, the policy is noted.

III. OPERATION PROCEDURES

EMERGENCY PROCEDURE POLICY AGREEMENT

A. NOTIFICATION

UPON NOTIFICATION OF AN EMERGENCY, WMATA, THROUGH ITS CONTROL CENTER WILL IMMEDIATELY NOTIFY THE JURISDICTIONAL FIRE/RESCUE SERVICE OR SERVICES RESPONSIBLE FOR TAKING CORRECTIVE ACTION.

1. The WMATA METRO Rail Operations Control Center (OCC) shall notify the appropriate jurisdictional Fire Communications Center(s) when it receives indication of a fire/rescue emergency whether it is a personal observation or from automatic detection equipment. The most exact description possible of the type, extent and location of the emergency should be included in the information given to the fire communications centers.

2. Upon notification of an emergency in the WMATA System, from a source other than the WMATA OCC, the Fire/Rescue Communications Center dispatching the apparatus shall immediately notify WMATA OCC for the purpose of alerting and verification.

3. In the event WMATA OCC receives information that fire/rescue personnel are not actually needed before units reach the scene of the reported emergency, the OCC will notify the dispatching Fire Communications Center immediately. In this contingency, a unit should continue to the scene to verify the non-emergency status of the situation.

EMERGENCY PROCEDURE POLICY AGREEMENT

B. FIRE/RESCUE EMERGENCY RESPONSE

UPON NOTIFICATION OF AN EMERGENCY WITHIN THE WMATA SYSTEM, THE FIRE/RESCUE SERVICE SHALL RESPOND TO THE REQUEST FOR EMERGENCY SERVICE.

1. Jurisdictional fire/rescue services with METRO Rapid Rail emergency responsibilities should pre-plan service activities and response procedures to assure adequate manpower and equipment responses to METRO Rapid Rail emergencies.

2. When information is received of an emergency in a tunnel, units should be dispatched to an entrance on each side of the emergency. The exact location of an emergency in a tunnel may be difficult to determine, therefore, the two directional approach may save time in starting operations.

C. COMMAND AND CONTROL

EMERGENCY PROCEDURE POLICY AGREEMENT

THE FIRE/RESCUE SERVICE SUPERVISOR AT THE SCENE OF AN EMERGENCY INVOLVING THE WMATA RAPID RAIL SYSTEM WILL ASSUME OVERALL COMMAND OF THE EMERGENCY SCENE.

1. The fire/rescue official of the first arriving company or

unit will assume control and responsibility for the incident. The fire/rescue service will maintain control of the incident until the conditions have been alleviated.

2. A WMATA supervisor will be assigned to all emergencies and will coordinate activities between the fire/rescue service and WMATA employees.

3. The senior fire/rescue official on the scene of an emergency will furnish the OCC with the name of the fire/rescue official in command of the operation and inform OCC of any changes in command during the emergency or other pertinent information. The OCC will furnish the name(s) of the WMATA Rail Service Supervisor assigned to the emergency and any other technical personnel on the emergency scene who could be of assistance.

4. When operations require the fire/rescue units from different jurisdictions, the fire/rescue service first to arrive at the located emergency should be responsible for the operation until relieved by an appropriate official from the jurisdiction in which the incident occurs.

D. TRACTION POWER

EMERGENCY PROCEDURE POLICY AGREEMENT

THE WMATA OCC WILL REMOVE POWER FROM THE THIRD RAIL WHEN REQUESTED TO DO SO BY THE FIRE/RESCUE SERVICE.

1. Removing Power
   a. When third rail power is to be removed by the fire service, the OCC shall be contacted by the commanding

officer (see Section I) before using the "Emergency Trip Switch (ETS)" at the "Blue Light Station". The OCC may request a delay in removing the power to allow the movement of trains out of the emergency area. The commanding officer can allow or deny this request. When the delay request has been granted the commanding officer shall remain at the "Blue Light Station" until the power has been removed. After the decision has been made to proceed, a responsible person may be assigned to the "Blue Light Station" to gather and pass-on information to the OCC and Fire/Rescue personnel.

b. Nothing in the foregoing is intended to prohibit the use of the E.T.S. without first calling the OCC when the nature of the emergency requires immediate action. When the E.T.S. is used without first calling the OCC the telephone will ring and the person activating the E.T.S. should answer and explain the situation and the reason for the action.

c. When third rail power is reported removed by the OCC upon arrival of the Fire/Rescue units it should not be considered removed until it has been tested. Whenever there is any type of break in the third rail, each end of the third rail shall be tested to confirm power has been removed. It should never be assumed that the power will remain off.

d. When testing the third rail, safe procedures must be followed to ensure the safety of all personnel working in the track bed area.

(1) Prior to testing the third rail, the test intstrument should be tested at a known electrical source to be certain it is functioning properly. When the initial test instrument does not indicate electrical current at the known source, a second tester should be used to ensure that the instruments are working properly.

(a) 110 volt outlets are provided, usually under every other bench along station platforms, and under every other flourescent light in the tunnels. The AC-DC tester can be tested at these locations.

(b) In areas where the track is at ground level no outlets are provided. However, in these areas, fire service apparatus should be close by and the test can be made using the auxiliary generator power supply on the apparatus.

(2) Always make contact with the ground or "running" rail first. The two "running" rails provide the ground for the system. The running rail nearest the third rail should be used in testing.

(a) "Going to ground" first is a basic safety rule in working with electrical current. It assures that the proper path to the ground has been eslished prior to making contact with the "hot" side.

(b) If contact is made with the "hot" side first, the other probe becomes "hot". Any accidental contact with persons or objects in proximity could result in serious injury or damage.

(3) Upon completing the test, remove the probe from the "hot" side first for the same reasons stated in No. 2.

(4) Retest the instrument(s) at the known electrical source if the tester showed no current to confirm that the tester was functioning properly.

2. Restoring Power

a. Initially, OCC may have to cut power in a larger section than necessary, interrupting train traffic in other areas. When a WMATA official arrives on the scene to survey the affected area, he may request permission from the fire/rescue officer in charge to restore the third rail power in the areas not affected by the emergency in order to allow restoration of limited service. The officer in charge has an option to grant or deny this request.

b. When fire/rescue operations have been completed and fire/rescue personnel and equipment have cleared the emergency area, the fire official in command of the scene will notify the OCC and the responsible WMATA official on the scene that power may be restored.

3. WMATA Traction Power Procedure (See Appendix A)

E. RAPID RAIL TRANSIT VEHICLE MOVEMENT

EMERGENCY PROCEDURE POLICY AGREEMENT

UPON NOTIFICATION OF AN EMERGENCY AFFECTING RAIL OPERATIONS, WMATA CONTROL CENTER WILL STOP ALL TRAINS IN THE AFFECTED AREA AT THE NEAREST STATION OR WILL REROUTE THEM OUT OF THE AREA, IF PRACTICABLE.

1. When Rail Service is interrupted during an emergency, every attempt will be made to move the trains to the nearest station before discharging passengers. The discharge of passengers to the track bed will only be executed when other alternatives are not available.

2. In the event of fire or smoke on a train, the operator will attempt to bring the train into a station. However; if operating on the surface, the operator shall not enter a tunnel to reach a station.

3. The OCC will advise the relevant fire/rescue service communications center and fire/rescue personnel on the scene of an emergency,of any change in status of train evacuation or movement within the affected area.

4. Fire/Rescue personnel should always be on the lookout for coasting trains during power shutdowns. When power is removed, train operators are instructed to coast to the nearest station or emergency exit, if safe to do so, in order to facilitate passenger evacuation. (See Section J. - 6.-L. FLAGGING).

F. EVACUATION

A MAJOR CONSIDERATION OF THE FIRE/RESCUE SERVICE WILL BE FOR THE EVACUATION OF WMATA PASSENGERS AND EMPLOYEES OUT OF THE EMERGENCY AREA.

1. Regardless of the cause, major fire or very minor mechanical problem, evacuation of the public is a very serious problem possibly requiring a far larger response by the fire/rescue service than would be necessary to handle the incident precipitating the emergency.

2. Panic of the passengers is a major concern of the fire/rescue service. Every attempt must be made to evacuate the public quickly and in an orderly fashion to avoid a panic situation.

3. Subsurface Stations

   a. The escalators and/or stairways of the main entrance will normally be the primary means of evacuation in case of an emergency in a station. All escalators can be stopped selectively by the attendant at the kiosk and all surface to mezzanine escalators are stopped automatically upon activation of any smoke or fire alarm within the station, thus preventing entry of passengers unaware that an emergency exists.

   b. Elevators are provided in each station for the use of the handicapped, however, they are not considered a primary means of evacuation. The escalators will handle both wheeled stretchers and wheel chairs and provide a more reliable and accessible means of evacuation. The elevators should only be used if the escalators are inoperative or for handicapped persons in those cases where only stairways are provided.

c. Depending upon circumstances, alternate means of evacuation may be necessary. These alternate means would include the emergency exits (provided at all single entry stations) the tunnels, or subway trains.

d. A public address system is provided in each station and can be used either by the station attendant or by the OCC. The public adress system could be used in directing passengers to the chosen means of evacuation and to direct them away from the means of entry for fire/rescue personnel.

4. Trains

a. The preferred means of evacuating a train in an underground area is to bring the train to a station or to an above ground location, and evacuate the passengers through the station or directly to the surface. There are alternatives to this method involving the use of other trains, which will require the traction power to remain on until the evacuation has been completed. These alternative methods may require a delay in some fire service operations.

b. The evacuation of passengers from a disabled train which is unable to reach a station is difficult and time consuming, since the primary means is by way of the doors at each end of the train. These doors are very narrow, open inward, and are 40 inches above the track bed.A narrow ladder is provided in each rail car.

The discharge of 1500 passengers from a fully-loaded train by this method would consume a tremendous amount of time.

c. Only when power has been CONFIRMED REMOVED from the entir length of the train, is evacuation of the passengers by means of the side doors acceptable when not in a station.

5. Tunnels

a. Evacuation from a tunnel by way of the closest station, or the stations on both sides of the incident location, would usually be the simplest and easiest exit and should be considered the preferred means of evacuation.

b. Emergency exits are provided at single entry stations and between stations as required. However, it should be remembered that using an emergency exit usually will involve climbing the metal stairway in a shaft 50 to 100 feet deep and exiting through hatches that are often very narrow and difficult to use. For this reason, they should normally be considered a secondary means of evacuation.

c. Portal entrances, the train entry and exit points to the underground portion of the subway system, should be considered as a good means of evacuation. The only disadvantage being that due to the fences along the ground level right-of-way, passengers might have difficulty getting from the portal entrance to the street.

d. Due to the possibility of infirm, elderly, or very young persons, who would need assistance in the evacuation of passengers from a tunnel, a large number of fire fighters may have to be assigned to accomplish this task.

e. The intercom, through which the OCC can talk directly to the passengers on a train, should be kept in mind as a means of avoiding panic, suppressing a panic in progress, and giving directions to passengers as to when to evacuate, what direction to go, what stations or emergency exits to use, etc. The officer in charge should not hesitate to call the OCC and direct them to transmit the appropriate message to the train involved.

G. STANDPIPES

STANDPIPES ARE PROVIDED IN ALL STATIONS AND UNDERGROUND PORTIONS OF THE RIGHT OF WAY. THE STATION AND TUNNEL STANDPIPES ARE NOT INTERCONNECTED MAKING IT NECESSARY TO ASSURE THAT THE STANDPIPE TO BE USED IS PROPERLY SUPPLIED.

1. Sub-Surface Stations

a. The standpipes in subway stations are connected to the municipal water system. Siamese connections near the entrances are appropriately marked to identify them with the station they supply. Transfer stations have more than one level and in these stations the standpipes are interconnected. The hose valves are located in the fire equipment cabinets on the mezzanines and at the ends of the platforms and under the platform at 200 foot intervals. Hose valves may be located in other positions due to different station configuration. The manhole covers with the identifying standpipe insert must be removed to reach the hose valves under the platforms. Fire companies responding for fires in stations shall use normal standpipe procedures to supplement the water supply and utilize the hose valves.

2. Surface Stations
   a. The standpipes in surface and aerial stations are dry and have appropriately marked siamese connections near the entrances. There are generally hose valves in the fire equipment cabinets, at the mezzanine level and one per platform, as well as every 200 feet along the platform.
3. Tunnels
   a. The standpipes in tunnels have no connection to the municipal water system but are maintained full of water to the freeze line, thus providing a head of water and eliminating the need to exhaust large quantities of air.
   b. The risers in the vent and fan shafts have a manual drain at a point below the freeze line. Individual jurisdictions must develop procedures to assure that the segment of standpipe to be used is supplied as well as properly drained after use.
   c. These standpipes are segmented and the segments are not interconnected. Each segment is supplied by a siamese connection located on the surface in a vent or fan shaft and identified in accordance with the shaft in which it is located. There are three exceptions to this configuration which are the tunnels under the Potomac River, Washington Channel and the Anacostia River. These

METRO RAPID RAIL TRANSIT FIRE/RESCUE
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standpipes have a siamese connection on the surface at each end of the tunnel and are appropriately marked. The hose valves are located along all tunnel walls at 200 foot intervals.

H. EMERGENCY VENTILATION

DURING A FIRE EMERGENCY IN A METRO TUNNEL, THE VENTILATION SYSTEM CAN BE USED BY THE FIRE SERVICE TO CREATE A SMOKE-FREE PATH FOR EXIT OF PASSENGERS AND ENTRY OF FIRE FIGHTING/RESCUE PERSONNEL.

1. Capabilities of the Ventilation System

The ventilation system in the METRO system consists of gravity vent shafts, within 100 feet of each end of a subsurface station, with movable louvers. There are also powered fan shafts, between stations, containing large reversible fans. Stations also have separate reversible ventilation systems with the exception of Union Station, Judiciary Square, Gallery Place, Metro Center, Farragut North and Foggy Bottom. Air movement in the stations and tunnels is normally controlled by thermostats starting or stopping fans as required. In a fire emergency, OCC can start, stop or reverse tunnel fans [which also closes the vent shaft louvers (The louvers must operate in conjunction with the fans in order to achieve effective air movement)] and the station ventilation system. The effect would be to exhaust smoke through a fan shaft, pull fresh air in through station escalator ways, and provide a relatively smoke-free environment at least on one side of the incident.

2. Initial Action

a. Train Operator - will report the location as precisely as possible, determine what actions must be taken for the safety of passengers (i.e., rescue train, walking to exit of station) and advise OCC.

b. OCC -- In the Event of a Fire In:

(1) Station - OCC may use predetermined instructions to activate emergency ventilation equipment for fire incidents in stations.

(2) Tunnel - OCC will not activate the emergency ventilation system until directed by the fire official in charge. (The System may be in an operating MODE under normal operation when fire personnel arrive at the scene.)

c. Fire Service - Upon arrival on the scene, the officer in charge shall size up the fire situation, in tunnel areas, with consideration for direction of public evacuation and entry path for fire fighters. When a determination is made as to the desirable direction to move the smoke, OCC shall be directed to start the appropriate fans or to adjust the operation of the fans if already operating.

3. Subsequent Actions

If the officer in charge determines that the ventilation system is not working to the best advantage, or not working at all, the following actions may be initiated. A verbal request to OCC to reverse, stop or start fans can be tried. If immediate action is indicated, each fan shaft contains a manual switch that has forward, reverse and automatic positions. OCC only has control over the fan and louvers when this switch is in the automatic position; however, fire service personnel can use this switch to control fans as necessary. Control of the station ventilation system by other than OCC would be difficult because of lack of standardization of control location. If the automatic controls fail, Plant Maintenance personnel can be sent to the scene to manually operate station ventilation equipment.

Note: Some emergency exits from tunnels are contained in fan shafts. If the emergency exit is to be used for evacuation of passengers, it is essential that the shaft not be placed in the exhaust mode.

I. COMMUNICATIONS SYSTEMS

At present, ordinary radio communication is not possible when working in underground METRO facilities, therefore, alternative means of communicating must be used. Recognizing the limitations, adherence to these procedures will make it possible to communicate with the OCC and the appropriate Fire Communication Center from underground METRO facilities.

1. Radio

a. Portable to portable communication in tunnels is usually limited to 800 feet. However, it will vary greatly, depending on location and tunnel characteristics.

b. Portable to surface portable or mobile communication may be possible when located near a vent or fan shaft.

c. Portable to surface portable or mobile communication may be possible from some station platforms. The depth of the station and location on the platform are the determining factors for successful communication.

2. Telephone

a. Telephones are located in "blue light" boxes, which are not more than 800 feet apart in tunnels, and at the end of station platforms. Telephones are also located in fan shafts and ancillary rooms and are easily identified by their distinctive orange color.

b. Telephones may be used to contact the Operations Control Center (OCC) by removing the telephone hand set from the hook and depressing the lower left button which is identified by a star (*). This activates a direct emergency line to the OCC which takes precedence over other calls.

c. Calls to the OCC, utilizing the star (*) button, can be extended, on request, to the appropriate fire communications center. This enables a person at a "blue light" or other orange telephone to communicate to Fire Communications Center on a direct line.

d. The telephones are arranged so that up to 10 instruments are on one line and it is possible for another instrument on the same line to be in non-emergency use at the time an emergency call is to be placed. Under these conditions, depressing the star (*) button will activate the emergency line to OCC but the other conversation will continue to be heard, which may cause some initial difficulty. Fire/Rescue personnel should not hesitate to interrupt any non-emergency conversation.

e. The possibility exists for emergency calls to be attempted from more than one instrument on the same line. When this happens, the first call initiated will be completed and the other telephones on that line will not work until the first call is completed.

f. In view of the limitations of the telephone system and the resulting confusion when more than one call is initiated simultaneously utilizing the emergency line (star button), the following restrictions are necessary:

(1) The Officer in Command of the first arriving unit at a given location shall use the emergency line to determine the status of the emergency and order power removed from the third rail as indicated by conditions.

(2) Other arriving units at a given location should avoid use of the emergency line.

(3) The Fire/Rescue Officer in Command at a given location shall establish communications, using the emergency line as needed. All messages to and from the scene of the emergency shall be routed through this Officer.

Note: Nothing herein shall be construed as prohibiting the use of the emergency line in a true emergency requiring immediate communication with OCC or the appropriate fire/rescue communications center by any unit on the scene of an emergency.

3. Radio and Telephone Combination

Combining a short portable to portable radio relay with a telephone direct line to the Fire Communications Center is the best communication alternative for personnel working in underground METRO facilities.

J. OPERATIONS

THE FIRST CONSIDERATION OF THE FIRE/RESCUE SERVICES IS FOR THE SAFETY OF THE WMATA PASSENGERS, EMPLOYEES, AND FIRE/RESCUE PERSONNEL INVOLVED IN AN EMERGENCY OPERATION.

1. Preplanning

METRO Rapid Rail stations and tunnels vary in configuration and accessibility, making it incumbent on each jurisdiction to adequately preplan the individual stations and tunnels. Consideration must be given to station evacuation and entrance locations, standpipes, vent shafts, emergency exits and any special features associated with each station. When rapid rail stations intersect political boundaries, preplanning must be coordinated with all jurisdictions involved.

2. Size-Up

a. The major concern of METRO related incidents will be the safety and expeditious evacuation of passengers. In addition to routine size-up, particular care must be taken to accurately evaluate the situation regarding the movement of passengers from trains in tunnels and stations (see Section F).

b. A concern during size-up must be directed to the traction power. All Fire/Rescue personnel responding to a METRO related incident must be familiar with the provisions in Section D "Traction Power".

3. Utilization of Resources

a. Apparatus

Apparatus should be positioned, according to the pre-plan, so as not to interfere with evacuation procedures but so as to be in position to charge the standpipes if necessary. Repeated trips to the apparatus for tools and appliances interferes with orderly evacuation and wastes time. Provisions should be made to take the following equipment, where available, when entering a METRO facility:

—Bull Horn

—Self contained breathing apparatus

—Extra air bottles for breathing apparatus

—Portable radio

—VOLT probe or other traction power tester

—METRO tool and keys

—Lights and cable reel

—Wheelchocks

—Life Line

—First Aid Kit

—Oxygen equipment (First Aid)

—Stokes stretcher

—Standpipe equipment

—Hand lights

—Forcible entry tools

—Extracation Equipment

b. Manpower

Commanding officers must impose severe restrictions on the freedom of movement, exercise direct supervision, and be accountable for personnel under their command when operating in Rapid Rail stations and tunnels.

c. WMATA Personnel and Equipment

The size and severity of the emergency will determine what WMATA personnel and equipment will be on the scene. During minor incidents, Station Attendants, Transit Police and possibly the Rail Engineers (General Maintenance Department) will be the only WMATA personnel involved. When serious incidents occur, WMATA will assign a supervisor who should be consulted by the Fire/Rescue Commanding Officer for advice and coordination of effort. The WMATA supervisor will be able to obtain the service of personnel and equipment, maintained by WMATA, which may be helpful during the incident.

d. Command Post

It is necessary that a "Command Post" and/or "Staging Area(s)" be established for all emergencies. The "Command Post" should be located in proximity to a telephone (Kiosk, "Blue Light" station, fan shaft, etc.) and its location made known to all WMATA and Fire/Rescue personnel

4. Breathing Apparatus

Fire/Rescue personnel should not enter Rapid Rail underground station and tunnels, when responding for fire emergencies, without self-contained breathing apparatus. When 30 minute self-contained breathing apparatus is utilized for fires in tunnels, an extra supply of air bottles should be provided.

5. Special Considerations

a. Fires in Electrical Installation

High voltage electrical power is supplied to the A/C Switchboard Rooms, Traction Power Substations and D.C.

Breaker Rooms (tie breaker stations). The only people having access to these rooms are the WMATA power crews. Fire/Rescue personnel should not force entry into the electrical power rooms unless there is reason to believe a life hazard exists. Treat fires in these rooms the same as fires occuring in surface utility company electrical substations.

b. Elevated Structures

When emergencies occur on elevated portions of the METRO system, evacuation and fire extinguishment may be facilitated by the placement of ground and aerial ladders. Ladder placement and operations for the elevated structures should be included in the preplanning for the area.

c. Remote Surface Right of Way

Access to remote areas of surface and aerial areas may be a problem. Jurisdictions must survey their portions of the Rapid Rail system to identify such areas and develop plans for emergencies that may occur.

6. Safety Rules

a. Fire/Rescue personnel are not permitted to operate on track areas unless assured that the power is removed. This rule may be ignored only:

(1) If human life is in imminent peril and immediate action is required to save life.

(2) When necessary to walk on the safety walk to the next ETS to remove power.

b. Power will never be considered off until the third rail has been tested with the Voltprobe or other testing instrument. In order to be sure that power has not been restored accidentally, the rail should be tested periodically.

c. Always treat the third rail as though it were energized. Restoration of power must always be anticipated.

d. The third rail cover board should never be used to stand or step upon.

e. There is a power pickup "shoe" below the side doors at each end of a rail car. Should any of these shoes be in contact with an energized third rail, all shoes on that car will be energized. Caution must be used to ensure that the power has been removed from all portions of the third rail in contact with the train.

f. In many areas there are breaks or gaps in the Third Rail for various reasons. If it is necessary to operate in the track area, each separate section of the Third Rail MUST BE TESTED in order to assure that power has been removed.

g. There are many stories about using an iron bar or chain from the Third Rail to ground, to ensure that a short circuit would occur, throwing the breakers, if power should be restored. Due to the high voltage and amperage in the system, such a dead short would cause a very severe arc which could blind or fatally burn anyone in proximity. DO NOT ATTEMPT THIS PROCEDURE.

h. While Fire/Rescue operations are under way, the following steps must be taken before allowing traction power to be restored to an adjacent track:

   (1) Ensure that all WMATA and Fire/Rescue personnel clearly understand which tracks are to be re-energized.

   (2) Ensure that all personnel are aware that the tracks are to be re-energized.

   (3) Ensure that no one is in proximity to the track to be re-energized.

i. When ladders are used in proximity to the tracks, the ladder should not be placed in the track bed or be permitted to extend beyond the railing where it may be struck by a moving train.

j. When working at an incident involving the trains, use wheel chocks to prevent movement of the rail cars. Wheel chocks should be removed before leaving the emergency scene to prevent possible derailment when the train is moved.

k. Always be on the lookout for coasting trains when working on track areas; personnel should be stationed on the perimeters of the operations for this purpose. Generally, when it is necessary for the fire department to operate on the track, all train movement should have ceased. However, in cases where a train may be trying to coast to a station, or work vehicles are approaching the incident, the following procedures should be followed:

(1) Personnel equipped with handlights and portable radios should be positioned as a flagman in a safe area approximately 750 feet on each side of the incident.

(2) When a vehicle approaches, the flagmen should assume a safe position out of the track bed, face the vehicle and swing the lighted handlight horizontally from side to side across the track so that it can be seen by the approaching vehicle operator.

(3) If the vehicle does not heed this warning to stop, the portable radio should be used to alert the crew working on the track, who would then seek an area of safety. Radio limitation must be considered when establishing the flagmen's location; a relay system may be necessary.

l. All members should carry flashlights or hand lights at all times.

m. A pre-selected area of safety shall be a constant thought of all members for use in an emergency.

n. All articles of clothing shall be securely fastened due to the limited space that will be encountered.

o. Fire/Rescue Officers must account for all personnel before releasing an area after a fire/rescue operation.

p. When fire/rescue personnel are working in the track switching area, caution must be used since switches operate independently of the traction power.

APPENDIX "A"

WMATA TRACTION POWER PROCEDURE

A. "Short Duration Emergency" - emergency in which the cause of removal of third rail power has been corrected prior to the arrival of the WMATA mobile power crew at the designated power substation and/or tie breaker station and report to the OCC Supervisor that they are in position.

(1) Power would have been removed by depressing an ETS button or by a verbal request to OCC.

(2) When fire department personnel are clear of the incident a verbal notification to OCC will be sufficient to allow power to be restored.

B. "Extended Emergency - an emergency that has not been resolved prior to the arrival of the WMATA mobile power crew(s) at the involved power substation and/or tie breaker station(s).

(1) If the emergency is expected to continue, the WMATA mobile power crew(s) shall rack out and tag the tripped circuit breakers (this removes remote control over the breakers from OCC).

(2) The authorized crew member shall complete a red tag for each racked out circuit breaker, sign them and attach one to each of the racked out breakers. The authorized crew member shall remove the stubs from the red tags and deliver them to the Transportation Supervisor at the scene of the emergency.

(a) The Fire Officer in charge of the incident must establish and maintain contact with the WMATA Transportation Supervisor at the scene of the incident.

(b) When the emergency has been cleared and all fire department personnel are off the track, the fire department officer in charge shall report this fact to the Transportation Supervisor so that power can be restored.

C. Power Restoration - Extended Emergency

(1) When the emergency is corrected the Transportation Supervisor at the scene shall request third rail power restoration through the OCC Supervisor. The Transportation Supervisor shall advise the OCC Supervisor of the red tag stubs and repeat the substation and tie breaker substation they refer to including the numbers of circuit breakers racked out.

(2) The OCC Supervisor shall verify the above information on the Traction Power CRT.

(3) The OCC Supervisor shall advise the authorized power crew member at the substation and the tie breaker station that power is to be restored. The OCC Supervisor shall repeat the red tag circuit breaker number(s) to the authorized power crew member and request that they be placed in the remote position before restoring power by supervisory control.

(4) When the OCC Supervisor is notified that the required circuit breaker is in the remote position and the Transportation Supervisor advises that all personnel at the scene are in the clear, the OCC Supervisor shall restore the power.

(5) The authorized crew member shall verify to the OCC Supervisor that the circuit breakers did close and third rail power has been restored to the section. The OCC Supervisor shall then verify to the Transportation Supervisor at the scene that power has been restored.

(6) The authorized power crew member shall then obtain the red tag stubs from the Transportation Supervisor assigned them.

D. Receipt of an Emergency Trip Station (ETS) Alarm, But No Communication

(1) When the third rail power is removed from a power section or sections by an ETS operation and no communication is received at the OCC from the person who operated the ETS, the OCC Supervisor shall:

(a) Instruct train operators of trains approaching the ETS location to stop their trains and report their positions.

(b) Attempt to establish communication to the ETS that was operated via the PABX number.

(2) The OCC shall dispatch the nearest Transportation Supervisor to the ETS location to investigate, examine the area for a cause and report back.

(3) The OCC Supervisor shall assure that the third rail power remains OFF until:

(a) The cause of the ETS operation is known and corrected, or

(b) The area where the ETS was operated has been examined by Authority personnel and no apparent reason for the power removal can be discovered.

APPENDIX G

WMATA CONSTRUCTION SAFETY PROGRAM

Each of our construction contracts includes requirements for Contractor compliance on matters pertaining to safety. Our standards are those established by the Occupational Safety and Health Act (OSHA). In addition, our contracts require compliance with safety standards established by local jurisdictional authorities where those requirements are more stringent than those established by OSHA. Compliance with safety standards is just as much a contractual responsibility of our contractors as is compliance with plans and specifications for the tunnels and structures being built.

To insure maximum compliance on safety matters the Authority and its Consultants have established a Coordinated Safety Program and Reporting Procedure. Each individual construction site is under the supervision of a separate Resident Engineer and his staff of inspectors. Each Resident Engineer works directly as an Authorized Representative of the Contracting Officer. Each Resident Engineer and his inspectors has, as a vital part of contractual responsibility, the requirement to insure that the construction work is accomplished in compliance with good salary standards.

To assist and monitor safety responsibility carried by the Resident Engineer and their inspectors our General Construction Consultant, Bechtel Associates, has four Safety Supervisors who are in constant touch with their field projects on matters pertaining to safety. These activities are directly under the control and supervision of the Contracting Officer and the Office of Construction. In a corollary function, the National Loss Control Service Corporation (NATLSCO), as a subsidiary of our overall insurance carrier, is under contract to the Authority to provide an independent inspection of METRO construction job sites to assure the contractors are performing their work within approved safety standards. They provide a work force of 11 inspectors to carry out this function. NATLSCO reports to the WMATA's Secretary Treasurer through our insurance representative, METRO Insurance Administrators (MIA). MIA also employs a safety specialist who monitors NATLSCO's activities to assure maximum quality of our inspection services. NATLSCO and MIA working together also provide various collateral safety services including such things as Industrial Hygiene Surveys, Educational Aids, Safety Lectures, and Special Reports on Sensitive Safety Matters.

WMATA CONSTRUCTION SAFETY PROGRAM

To assure coordination of the various elements of our safety organization, we have established a Coordinated Safety Committee made up of one representative from each of the following: METRO Insurance Administrators, NATLSCO, Bechtel and the WMATA Office of Design and Construction. This Safety Committee meets weekly and reports its recommendations directly to the Contracting Officer. A Safety Advisory Committee has also been established. This Committee is comprised of all of the members of the Coordinated Safety Committee plus three respresentatives from the building trade unions and three members from Contractors working on METRO constructions. This Committee meets regularly on a monthly basis and provides its recommendations also directly to the Contracting Officer. One of the main functions of the Safety Advisory Committee is to provide guidance and assistance to the various unions in the conduct of their individual safety training program.

Safety enforcement is also a function of the construction contract. Each Contractor is required by contract specifications to provide a Safety Superintendent approved by the Contracting Officer before any meaningful work is undertaken. The qualifications of the Safety Superintendent are reviewed by the Coordinated Safety Committee and each candidate nominated is interviewed personally by that Committee. Once approved by the Contracting Officer the Contractor's Safety Superintendent cannot be fired nor replaced except with the concurrence of the Contracting Officer. Through field inspections and reviews of safety records by the Resident Engineer and his staff and inspections by NATLSCO, Bechtel, and the Authority personnel, the efforts and effectiveness of each Contractor's Safety Superintendent are evaluated. Reports prepared by inspectors become a matter of daily review. Problem areas are given priority for assistance.

At the present time safety enforcement on Authority construction projects is a full time occupation for the following individuals:

Contractor Safety Superintendents	45)	These figures vary as contracts are completed and/or new contracts awarded
Full time First-Aid Attendants and Paramedics	27)	
NATLSCO Inspectors	11	
MIA Safety Supervisors	1	
Bechtel Safety Superintendents	4	
WMATA Safety Supervisor	1	
TOTAL	89	

WMATA CONSTRUCTION SAFETY PROGRAM

In addition about 35 Resident Engineers and close to 150 inspectors have the responsibility to enforce contract safety provisions as one of their collateral responsibilities. Thus, a total of about 350 persons are directly involved in the day-to-day effectiveness of the Authority Safety Program. Numerous other first-aid attendants provide safety direction to contractor personnel on a 2nd and 3rd shift basis.

The Authority recognizes that corrective action on discovered safety violations is just a small part of its safety responsibilities. It realizes that a long range effective safety program must recognize the importance of individual training. With a constant turnover of the personnel making up our 4000 man work force, individual training becomes increasingly important. To help with this problem the NATLSCO inspectors have been conducting a 10-hour OSHA training course for contractor personnel on a rotating basis. Additional training is provided through the conduct of weekly tool box safety meetings which are a requirement of each contract. The Authority conducts bi-monthly safety meetings attended by the Contractor Safety Superintendents and Resident Engineer personnel. At these meetings new safety concepts and training matters are discussed and long-standing basic safety principles are re-emphasized. Contractors are encouraged to conduct indoctrination training for newly hired personnel.

To provide a means for every workman to have a voice in safety, a phone line has been established to the Office of MIA that is available to all employees 24 hours a day. The number is published prominently on all job sites. Workers who wish to call attention to safety deficiencies or lodge complaints, may do so anonymously and without fear of reprisal. Any complaint called to this number receives prompt and complete action. The initiator of the call may have the satisfaction of knowing the results of his action if he will call back at a later time to inquire. In addition a hot line has been established 24 hours a day for any individual wishing to report an emergency situation or a matter of imminent danger. A report coming in on this hot line is immediately passed to members of the Coordinated Safety Committee who are available night or day to initiate safety measures to correct any hazardous situations which may be reported.

WMATA CONSTRUCTION SAFETY PROGRAM

Any situation which may constitute a safety threat to a member of the construction work force or to the general public or to property may result in a stop order to the Contractor on work being conducted in that vicinity. The Contracting Officer or a Resident Engineer acting as the Contracting Officer's Representative has the authority to shut down any job completely or in part any time that unsafe conditions may constitute a threat to the safety of personnel or to the damage of property.

As long as anyone is being injured or any property is being damaged there is room for improvement. The Authority is dedicated to strive for improvement to obtain even better safety results through continued training of individual personnel and daily inspections. We hope to improve our safety program.

APPENDIX H

GLOSSARY OF TERMS
USED IN THE
WMATA SYSTEM SAFETY PROGRAM PLAN

ACCIDENT - An unforeseen event or occurence which results in injury or property damage.

AUTOMATIC TRAIN CONTROL (ATC) SYSTEM - The ATC System consists of three control subsystems and a computerized Central Control facility. The three control subsystems are Automatic Train Operation (ATO), Automatic Train Protection (ATP), and Automatic Train Supervision (ATS). Each performs its own particular functions independently to a certain extent of the other two. The operations of the three subsystems are coordinated through the computer at Operations Control Center to achieve an integrated system.

AUTOMATIC TRAIN OPERATION (ATO) - That subsystem within the ATC System which performs functions normally performed by the operator. Those functions are acceleration, speed, and deceleration regulation, programmed stopping, and door control (in conjunction with ATP and the Train-to-Wayside Communication System).

AUTOMATIC TRAIN PROTECTION (ATP) - That subsystem within the ATC System which enforces safe operation of the system. It imposes speed limits both to maintain safe train separation and to operate trains in accordance with civil speed restrictions. At interlockings, ATP ensures that train movement is permitted only when a route is available through the interlocking, and the switches are safely locked in position. In all cases where two or more trains request the use of a single segment of track of interlocking, the ATP prevents occupancy by more than one train.

AUTOMATIC TRAIN SUPERVISION (ATS) - That subsystem within the ATC System which monitors the system status and provides the appropriate controls to direct the operation of trains in order to maintain traffic patterns and minimize the effect of train delays by controlling arrival and departure times, and by using Operations Control Center computer programs to accomplish minor schedule adjustments.

BLOCK - A section of track of defined limits, the use of which is governed by interlocking signals and cab signal under control and protection of the ATC System.

BLOCK, ABSOLUTE - A section of track between two specific locations into which no train is permitted to enter while it is occupied by another train. This absolute block is established and governed by the Operations Control Center when necessary due to a carborne malfunction (ATP or Braking) or ATC failure.

CHARACTERISTICS, OPERATING - Those quantitative, measureable parameters pertinent to a specific system, subsystem, device or component that provide definition of performance.

CLEARANCES - The distance between specified points along the tracks and specified points on moving vehicles.

CONSTRUCTION SAFETY - The optimum degree of safety within the constraints of construction effectiveness, time and cost through specific application of safety management throughout all phases of the construction.

CRASH SAFETY - A system characteristic that allows the system occupants to survive the impact of a crash and to evacuation the system after potentially survivable accidents.

CRASHWORTHINESS - The capacity of a vehicle to act as a protective container and energy absorber during impact conditions.

DEDUCTIVE - The term used to describe those analytical approaches involving the reasoning from a defined unwanted event or premise to the causative factors of that event or premise by means of a logical methodology. (The "top down" or "how could it happen?" approach).

DEGRADATION - Falling from an initial level to a lower level in quality or performance.

FAIL SAFE (SAFETY) - A characteristic of a hardware system and its elements, the object of which is to ensure that any fault or malfunction, will not result in an unsafe condition.

FAIL SAFE DESIGN - A design principle in which each of the elements which make up a system is analyzed to determine the potential consequence of failure of that element, alone or in combination with any or all other elements of the system, to ensure that a failure or a combination of failures will not result in an unsafe condition.

FAILED COMPONENT - A component which has ceased to perform its intended function.

FAILURE - An inability to perform an intended function.

FAILURE ANALYSIS - The logical systematic examination of a system to identify and analyze the probability, causes and consequences of potential and real failure.

FAILURE ASSESSMENT - The process by which the cause, effect, responsibility and cost of an incident (reported problem) in the transit system is determined and reported.

FAILURE, MAN - Failure due to human error.

FAILURE MANAGEMENT - Decisions, policies and planning which identify and eliminate potential failures.

FAILURE MODE (AND EFFECT) ANALYSIS (FMEA) - An inductive procedure in which potential malfunctions are identified and then analyzed as to their possible effects.

FAULT TREE ANALYSIS - A deductive procedure in which hazards are identified and then analyzed as to their potential causes.

HANDBOOK OF RULES - A set of codified regulations and procedures by which operating personnel are governed.

HAZARDS - Any real or potential condition that can cause injury or death, or damage to or loss of equipment or property.

HAZARD ANALYSIS - An analysis performed to identify hazardous conditions for the purpose of their elimination or control.

HAZARD CATEGORY - A quantitative measure of the severity of a hazard defined as follows:

> Category 1: Safe - Condition(s) such that personnel error, procedural deficiencies, environment, deficiency/inadequacy of design, or subsystem/component malfunction will not result in major system degradation and will not produce system functional damage or personnel injury.
>
> Category 2: Marginal - Condition(s) such that personnel error, procedural deficiencies, environment, deficiency/inadequacy of design or subsystem/component malfunction will degrade system performance, but which can be counteracted or controlled without damage or injury to personnel.
>
> Category 3: Critical - Condition(s) such that personnel error, procedural deficiencies, environment, deficiency/inadequacy of design, or subsystem/component malfunction will degrade system performance by personnel injury, or substantial damage or will result in a hazard requiring immediate corrective action for personnel or system survival.
>
> Category 4: Catastrophic - Condition(s) such that personnel error, procedural deficiencies, environment, deficiency/inadequacy of design, or subsystem/component malfunction will severly degrade system performance and cause subsequent system loss, death, or multiple injuries to personnel.

HAZARD RISK - A qualitative measure of the relative likelihood of occurrence combined with the hazard level.

HAZARD SEVERITY - A quantitative measure of hazard magnitude, expressed in suitable units of measurement.

INCIDENT - An unforeseen event or occurrence which does not result in injury or property damage.

INDUCTIVE - The term used to describe those analytical approaches involving the systematic evaluation of the defined parts/elements of a given system or subsystem to determine specific characteristics of interest. (The "bottom out" approach or "what happened if" approach).

INTERLOCKING - An arrangement of signals and signal appliances so interconnected that their movements must succeed each other in proper sequence.

MODE 1 (AUTOMATIC) - Train operation with train under ATO control with ATP monitoring and protection.

MODE 2 (MANUAL) - Train operation with train under manual (Train Operator) control with operation monitored and protected by the ATP System.

MODE 3 (MANUAL WITH ATP CUTOUT) - Train operation under manual (Operator) control without ATP monitoring and protection. This mode is not allowed unless passengers are evacuated from train and a Absolute Block is established to allow train movement.

NO CLEARANCE AREA - An area where the minimum safe distance between all points on a moving vehicle and fixed wayside structures or appurtenances is not sufficient to allow personnel to occupy this area during passage of a train.

OPERATIONS CONTROL CENTER (OCC) - The facility on the B1 Level of the WMATA Headquarters Building at 600 Fifth Street from where train control and train supervision is accomplished for the entire transit system.

PERSONNEL, OPERATING - Those employees of a transit system having direct and supervisory responsibility for the movement of trains, embodying both onboard and wayside duties.

QUALITATIVE - The term used to describe those inductive or deductive analytical approaches which are oriented toward relative, non-measureable and subjective values.

QUANTITATIVE - The term used to describe those inductive or deductive analytical approaches which are oriented toward the use of a numbers of symbols used to express a measurable quantity.

RAIL RAPID TRANSIT SYSTEM - An electrified fixed guideway transportation system, utilizing steel rails, usually for operating on an exclusive grade-separated right-of-way for the mass movement of passengers within a city or metropolitan area and consisting of its fixed way, transit car vehicles and other rolling stock, power system, maintenance facilities and other stationary and movable apparatus and equipment and its operating practices and personnel.

REVENUE SERVICE - The transportation of passengers.

RISK MANAGEMENT - An element of the system safety management function that evaluates the safety effects of potential hazards considering acceptance, control, or elimination of such hazards with respect to expenditure or resources.

RULE - A law or order authoritatively governing conduct or action.

SAFE - Secure from danger or loss.

SAFETY - Freedom from danger.

SAFETY CRITICAL - A designation placed on a system, subsystem, element, component, device or function denoting that satisfactory operation of such is mandatory to assurance of patrons, personnel, equipments, or facility safety. Such a designation dictates incorporation of special safety design features.

SIGNAL - A means of communicating direction or warning.

SIGNAL, CAB - A signal in the train operator's cab which indicates prevailing speed commands, and conveys ATC System aspects.

SIGNAL, INTERLOCKING - A wayside signal which governs movements into or within interlocking limits.

STATION - A place designated for the purpose of loading and unloading passengers.

SWITCH, TRACK - A pair of switch points with their fastenings and operating rods providing the means for establishing a route from one track to another.

SYSTEM - A composite of those hardware, people for software subsystems, or any combination, which are integrated to perform a specific operational function or functions.

SYSTEM SAFETY - The application of Operating, Technical, and Management techniques and principles to the safety aspects of a system throughout its life to reduce hazards to the lowest level possible through the most effective use of available resources.

SYSTEM SAFETY ANALYSIS - The composite term used to describe the process of providing before the accident identification, evaluation and communication of those factors and interactions within a given system (or element thereof) which could (1) cause, (2) contribute to, and (3) are needed to control inadvertent injury, death or material loss during any or all phases and activities associated with the given system's life cycle, in a logical and systematic manner.

SYSTEM SAFETY ENGINEERING - The application of scientific and engineering principles during the design, development, manufacture and operation of a system to meet or exceed established safety goals.

SYSTEM SAFETY MANAGEMENT - The organized planning, controlling and integration of all efforts directed towards System Safety.

SUBSYSTEM - A defined portion of a system which is in turn composed of subsystems, component parts, or both.

THIRD RAIL - A rail mounted on insulators alongside the running rail which provides traction power for train operation.

TRAIN - A consist of one or more pair of cars combined into an operating unit.

TRAIN IDENTIFICATION - A method of identifying trains using information such as train number, destination, length, or a combination of these elements. May be accomplished automatically for such functions as routing.

TRAIN OPERATOR - That person on board a train having direct and immediate control of the movement of a train.

TRANSIT CAR, RAIL RAPID - An electrically prop led passenge carrying rail vehicle characterized by high acceleration and raking rate for frequent stops, and fast loading and unloading.

TRANSIT SYSTEM FAIL SAFETY - The integration o the design, rocedures, people and all other elements of a transit system usi the princip s of fail safety and system safety in such a manner that equipm t failures c personnel errors, or combinations of both, shall not result in a increased ha ard level.

UNSAFE CONDITION - Any condition which endange human life r property.

VITAL FUNCTION - A system, subsystem, equiplme or componer that provides a function critical to safety.

APPENDIX I

LIST OF METRORAIL FAILURE MODES AND EFFECTS ANALYSES (FMEA)

Twenty-three System Safety Analyses which employed the Failure Mode and Effects Analyses (FMEA) format have been completed by Deleuw, Cather (DCCO), and submitted to WMATA. These twenty-three safety analyses are the following:

1. METRO Right-of-Way Intrusion Detection and Warning Study
2. Tunnel Ventilation System Safety Analysis
3. Emergency Power Distribution System Safety Analysis
4. Vehicle Pneumatic and Hydraulic Systems Safety Analysis
5. Traction Power Systems Safety Analysis
6. Operator - Machine Interface for Automatic Train Operations Safety Analysis
7. Automatic Train Control Printed Circuit Board Keying Safety Analysis
8. Automatic Train Control System Safety Analyses Parts:
    - 8.1 ATC Wayside Power
    - 8.2 Program Stop, Grade, and Curve Markers
    - 8.3 Wayside ATP, Train Detection
    - 8.4 Carborne ATP
    - 8.5 Carborne ATO/ATS
    - 8.6 Carborne Power
    - 8.7 Interlockings
9. Facilities Fire and Intrusion Alarm System
10. Kiosk Equipment and Operation Safety Analysis
11. Vehicle Subsystems - Couplers and Draft Gear Safety Analysis
12. Traction Power Emergency Trip Station Operations Safety Analysis

13. Vehicle Door Controls and Logic/ATC Interface Safety Analysis
14. Brakes/ATC Interface Safety Analysis
15. Propulsion/ATC Interface Safety Analysis
16. Passenger Station/Vehicle Evacuation Capabilities Safety Analysis
17. Fire Fighting Equipment and Capability Safety Analysis
18. Communication Systems Safety Analysis Parts:
    18.1 Power Distribution
    18.2 Transmission
    18.3 Voice Communication
    18.4 TCF Recording and Alarms
    18.5 Fire Detection and Intrusion
19. AC Power Distribution Safety Analysis
20. Escalator/Elevator Safety Analysis
21. Tunnel Drainage and Pumping Equipment Safety Analysis
22. OCC Equipment and Operations Safety Analysis
23. Derail Criteria/Placement Effectiveness Safety Analysis

The DCCO System Safety Group has been tasked to perform the following additional safety analyses:

1. OCC Computer Program/OP Procedure Analysis
2. Trackwork & Signals
3. SOP's/Operating Rules

APPENDIX J

LIST OF METROBUS STANDARD OPERATING PROCEDURES

1. Pre-Trip Inspection of a Bus
2. Mirror Adjustment
3. Starting and Stopping
4. Driving on Slippery Streets
5. Making a Left Turn
6. Making a Right Turn
7. Following Moving Traffic
8. Changing Lanes
9. Standard Curbing Procedure
10. Leaving a Service Stop
11. Passing and Being Passed
12. Observations
13. Intersection Operation (No Service Stop Required)
14. Operating in a School Bus Zone
15. Defensive Driving Guide
16. Securing a Bus
17. A.B.C. (Announcements Bring Customer Satisfaction)

APPENDIX K

LIST OF REPORTS SUBMITTED TO THE WMATA SAFETY BRANCH

REPORT PAGE

1. Employee Injury and Occupational Illness Report K - 2
2. Summary of Train Operation K - 4
3. Command Center Supervisor's Report K - 5
4. Accident/Injury Report K - 6
5. Incident Report K - 7

[illegible] (Rev. 1/1/76)

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
600 FIFTH STREET, N.W.
WASHINGTON, D.C. 20001

Employee Injury and Occupational Illness Report

FOR OFFICE USE ONLY

CLASSIFICATION NUMBER: ____________

FILE NUMBER: ____________

☐ RAIL RELATED ☐ BUS RELATED

IT A
.. BE FILLED OUT BY EMPLOYEE

EMPLOYEE INFORMATION

1. NAME: ____________ PHONE NO.: ____________ 2. SEX: ☐ MALE ☐ FEMALE
3. ADDRESS: ____________ APT. # ____________ ZIP: ____________
4. SOCIAL SECURITY NUMBER: ____________ 5. EMPLOYEE NUMBER: ____________
6. YEARS IN EMPLOY: ______ YRS. ______ MOS. 7. DIVISION/DEPARTMENT: ____________/____________
8. JOB TITLE: ____________ 9. INJURED WHILE DOING SUCH WORK: ☐ YES ☐ NO

LOCATION OF INJURY SPECITY: ☐ ON AUTHORITY PROPERTY ☐ OFF AUTHORITY PROPERTY

10. LOCATION WHERE ASSIGNED: ____________ (LOCATION) (ADDRESS) (STATE) (ZIP)

11. ☐ BUS OPERATION PROPERTY
    - ☐ ON BUS (# ____________)
    - ☐ ON LOT
    - ☐ IN GARAGE
    - ☐ OFFICE
    - ☐ SERVICE LANE
    - ☐ WASH RACK
    - ☐ STEAM RACK
    - ☐ OTHER: ____________

12. ☐ RAIL OPERATION PROPERTY
    - ☐ ON TRAIN (CAR # ____________)
    - ☐ IN SHOP: ____________
    - ☐ IN YARD: ____________
    - ☐ IN STATION: ____________
    - ☐ WASH TRACK
    - ☐ STEAM ROOM
    - ☐ OTHER: ____________

13. ☐ OTHER
    - ☐ OCCB
    - ☐ STONE STRAW
    - ☐ OTHER: ____________

14. STATE EXACT LOCATION WHERE INJURY OCCURRED: ____________

PART OF BODY INJURED SPECIFY (WHERE APPLICABLE): ☐ LEFT SIDE ☐ RIGHT SIDE

☐ SKULL
☐ FACE
☐ EYE
☐ TEETH
☐ NECK
☐ BACK
☐ SHOULDER
☐ ARM
☐ ELBOW
☐ WRIST
☐ HAND
☐ FINGER
☐ CHEST
☐ GROIN
☐ HIP
☐ LEG
☐ KNEE
☐ FOOT
☐ ANKLE
☐ TOE
☐ INTERNAL: ____________
☐ OTHER: ____________

16. **NATURE OF INJURY**

☐ CUT
☐ BRUISE
☐ SPRAIN/STRAIN
☐ BURN
☐ PUNCTURE WOUND
☐ FOREIGN BODY
☐ CRUSHING INJURY
☐ FRACTURE
☐ HERNIA
☐ OTHER: ____________

17. **TYPE OF ACCIDENT**

☐ FALL FROM ELEVATION
☐ FALL ON SAME LEVEL
☐ STRUCK AGAINST
☐ STRUCK BY
☐ LIFTING
☐ BODILY REACTION
☐ COLLISION (SPECIFY)
☐ BUS
☐ AUTO
☐ TRUCK
☐ TRAIN
☐ OTHER
☐ ELECTRICAL SHOCK
☐ CONTACT TEMPERATURE EXTREMES
☐ ASSAULT
☐ OTHER: ____________

18. **YOUR STATEMENT**

DESCRIBE HOW AND WHY THE INJURY OCCURRED. BE SPECIFIC! EXPLAIN WHAT YOU WERE DOING, LIST TOOLS YOU WERE USING, DESCRIBE HOW INJURY OCCURRED, INCLUDE THE REASON WHY YOU THINK THE INJURY OCCURRED, AND MENTION WHETHER OR NOT THAT WORK IS PART OF YOUR ASSIGNED DUTIES. (USE SUPPLEMENTAL SHEETS (IN TRIPLICATE) IF MORE SPACE IS NEEDED.)

19. WITNESSES TO ACCIDENT/INJURY. PLACE AN ASTERISK (*) AFTER NAME IF METRO EMPLOYEE.

NAME	ADDRESS	PHONE

20. SIGNATURE: ____________________ DATE: ____/____/____

PART B
TO BE FILLED OUT BY SUPERVISOR

1. TIME INFORMATION

DATE OF INJURY: ____/____/____ WAS EMPLOYEE SENT TO A DOCTOR OR HOSPITAL? ☐ Yes ☐ No
DATE OF DIAGNOSIS OF INJURY: ____/____/____ DR./HOSPITAL: ____________________
HOUR WORK BEGAN: ______ ___. M. HOUR OF INJURY: ______ ___. M.
DID EMPLOYEE STOP WORK IMMEDIATELY: ☐ YES ☐ NO
DID INJURY CAUSE LOSS OF TIME BEYOND DAY OR SHIFT OF ACCIDENT: ☐ NO ☐ YES
DATE AND HOUR PAY STOPPED: ____/____/____ ______ ___. M.
DATE AND HOUR EMPLOYEE FIRST DID NOT RETURN TO WORK: ____/____/____ ______ ___. M.
DATE AND HOUR OF NEXT SCHEDULED WORK: ____/____/____ ______ ___. M.
ASSIGNED DAYS:

— S M T W T F S — OR 10-4
(CIRCLE)

LAST DAY OFF IF 10-4: ____/____/____

2. EARLIEST TIME AND DATE SUPERVISOR OR EMPLOYER FIRST KNEW OF ACCIDENT ______ ___. M. ____/____/____
3. IN YOUR OPINION WHAT ACTION ON THE PART OF THE INJURED (OR ILL) PERSON OR OTHERS CONTRIBUTED TO THIS ACCIDENT (DEFECTIVE EQUIPMENT, UNSAFE CONDITIONS, UNSAFE ACT BY INJURED OR OTHERS, FATIGUE, LACK OF TRAINING OR SKILL, E
4. CORRECTIVE ACTION TAKEN: ____________________
5. YOUR RECOMMENDATIONS: ____________________
6. PAY AUTHORIZATION SENT THROUGH ☐ NO ☐ YES

7. SIGNATURE: ____________________ POSITION: ____________________
DATE: ____/____/____ DEPARTMENT/DIVISION: __________/__________

PART C
FOR SAFETY OFFICE USE ONLY

1. CLASSIFICATION OF INJURY OR ILLNESS

☐ TEMPORARY TOTAL
STARTED LOOSING TIME ____/____/____
RETURNED TO WORK ____/____/____
TIME CHARGED __________
☐ PERMANENT TOTAL

☐ PERMANENT PARTIAL
PART OF BODY __________
% LOSS OF USE __________
TIME CHARGED __________
☐ FATAL

2. COMPENSATION: $__________ MEDICAL: $__________ OTHER: $__________ TOTAL $__________

TIME STAMP

OUT	IN

DISTRIBUTION:

ORIGINAL : COUN/CLAIMS
COPY 1 : SAFETY OFFICER
COPY 2 : DEPARTMENT

K - 3

TRANSPORTATION DEPARTMENT - RAIL

SUMMARY OF TRAIN OPERATION: DAY__________ DATE__________ INITIAL__________

LTR *	ITEM	CODE	DIR & LINE	LOCATION	TIME	MIN DELAY	TRAIN & TERMINAL	TRIPS ABD	TBL	CAR NUMBER(S) AND DETAILS

RAIL TRANSPORTATION DEPARTMENT
COMMAND CENTER SUPERVISOR'S REPORT

DATE ______________________ LINE ______________________

TIME OF INCIDENT ______________________ LOCATION ______________________

INITIAL DELAY ______________________ REPORTED BY ______________________

INTERVAL ______________________ TRAIN OPERATOR ______________________

CARS ______________________

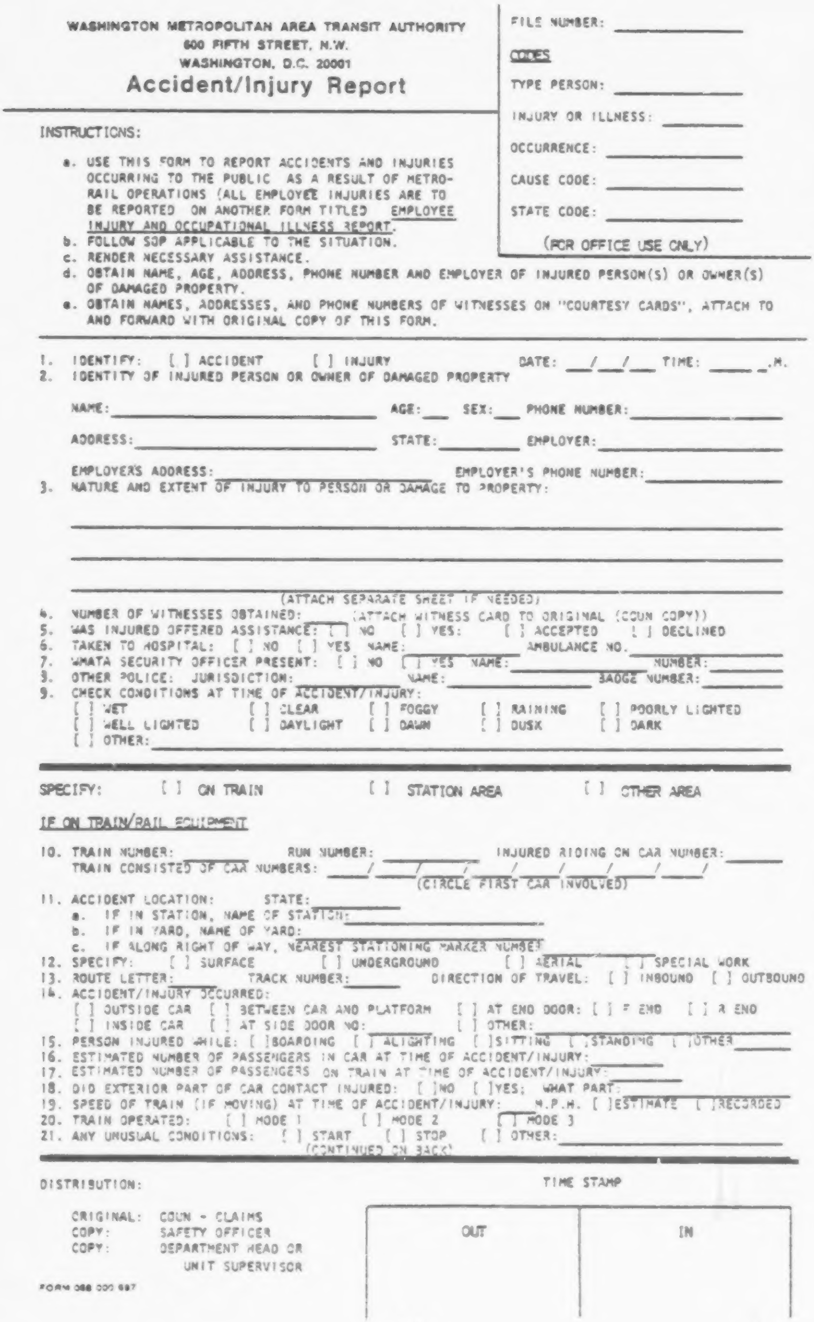
BRIEF DESCRIPTION OF INCIDENT ______________________

CHRONOLOGICAL SEQUENCE OF EVENTS ______________________

TRAINS ABANDONED ______________________

REROUTES ______________________

COMMAND CENTER SUPERVISOR: ______________________



WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
600 FIFTH STREET, N.W.
WASHINGTON, D.C. 20001

Accident/Injury Report

FILE NUMBER: ____________

CODES

TYPE PERSON: ____________
INJURY OR ILLNESS: ________
OCCURRENCE: ____________
CAUSE CODE: ____________
STATE CODE: ____________

(FOR OFFICE USE ONLY)

INSTRUCTIONS:

a. USE THIS FORM TO REPORT ACCIDENTS AND INJURIES OCCURRING TO THE PUBLIC AS A RESULT OF METRORAIL OPERATIONS (ALL EMPLOYEE INJURIES ARE TO BE REPORTED ON ANOTHER FORM TITLED EMPLOYEE INJURY AND OCCUPATIONAL ILLNESS REPORT.
b. FOLLOW SOP APPLICABLE TO THE SITUATION.
c. RENDER NECESSARY ASSISTANCE.
d. OBTAIN NAME, AGE, ADDRESS, PHONE NUMBER AND EMPLOYER OF INJURED PERSON(S) OR OWNER(S) OF DAMAGED PROPERTY.
e. OBTAIN NAMES, ADDRESSES, AND PHONE NUMBERS OF WITNESSES ON "COURTESY CARDS", ATTACH TO AND FORWARD WITH ORIGINAL COPY OF THIS FORM.

---

1. IDENTIFY: ☐ ACCIDENT ☐ INJURY DATE: __/__/__ TIME: ____ _.M.
2. IDENTITY OF INJURED PERSON OR OWNER OF DAMAGED PROPERTY

NAME: ____________ AGE: __ SEX: __ PHONE NUMBER: ____________

ADDRESS: ____________ STATE: ________ EMPLOYER: ____________

EMPLOYERS ADDRESS: ____________ EMPLOYER'S PHONE NUMBER: ____________

3. NATURE AND EXTENT OF INJURY TO PERSON OR DAMAGE TO PROPERTY:

____

____

____

(ATTACH SEPARATE SHEET IF NEEDED)

4. NUMBER OF WITNESSES OBTAINED: ____ (ATTACH WITNESS CARD TO ORIGINAL (COUN COPY))
5. WAS INJURED OFFERED ASSISTANCE: ☐ NO ☐ YES: ☐ ACCEPTED ☐ DECLINED
6. TAKEN TO HOSPITAL: ☐ NO ☐ YES NAME: ____________ AMBULANCE NO. ____________
7. WMATA SECURITY OFFICER PRESENT: ☐ NO ☐ YES NAME: ____________ NUMBER: ________
8. OTHER POLICE: JURISDICTION: ____________ NAME: ____________ BADGE NUMBER: ________
9. CHECK CONDITIONS AT TIME OF ACCIDENT/INJURY:
   ☐ WET ☐ CLEAR ☐ FOGGY ☐ RAINING ☐ POORLY LIGHTED
   ☐ WELL LIGHTED ☐ DAYLIGHT ☐ DAWN ☐ DUSK ☐ DARK
   ☐ OTHER: ____________

SPECIFY: ☐ ON TRAIN ☐ STATION AREA ☐ OTHER AREA

IF ON TRAIN/RAIL EQUIPMENT

10. TRAIN NUMBER: ______ RUN NUMBER: ________ INJURED RIDING ON CAR NUMBER: ______
    TRAIN CONSISTED OF CAR NUMBERS: ____/____/____/____/____/____/____/____/
    (CIRCLE FIRST CAR INVOLVED)
11. ACCIDENT LOCATION: STATE: ________
    a. IF IN STATION, NAME OF STATION: ____________
    b. IF IN YARD, NAME OF YARD: ____________
    c. IF ALONG RIGHT OF WAY, NEAREST STATIONING MARKER NUMBER ________
12. SPECIFY: ☐ SURFACE ☐ UNDERGROUND ☐ AERIAL ☐ SPECIAL WORK
13. ROUTE LETTER: ______ TRACK NUMBER: ______ DIRECTION OF TRAVEL: ☐ INBOUND ☐ OUTBOUND
14. ACCIDENT/INJURY OCCURRED:
    ☐ OUTSIDE CAR ☐ BETWEEN CAR AND PLATFORM ☐ AT END DOOR: ☐ F END ☐ R END
    ☐ INSIDE CAR ☐ AT SIDE DOOR NO: ______ ☐ OTHER: ____________
15. PERSON INJURED WHILE: ☐ BOARDING ☐ ALIGHTING ☐ SITTING ☐ STANDING ☐ OTHER ______
16. ESTIMATED NUMBER OF PASSENGERS IN CAR AT TIME OF ACCIDENT/INJURY: ________
17. ESTIMATED NUMBER OF PASSENGERS ON TRAIN AT TIME OF ACCIDENT/INJURY: ________
18. DID EXTERIOR PART OF CAR CONTACT INJURED: ☐ NO ☐ YES; WHAT PART: ____________
19. SPEED OF TRAIN (IF MOVING) AT TIME OF ACCIDENT/INJURY: ____ M.P.H. ☐ ESTIMATE ☐ RECORDED
20. TRAIN OPERATED: ☐ MODE 1 ☐ MODE 2 ☐ MODE 3
21. ANY UNUSUAL CONDITIONS: ☐ START ☐ STOP ☐ OTHER: ____________

(CONTINUED ON BACK)

DISTRIBUTION:

ORIGINAL: COUN - CLAIMS
COPY: SAFETY OFFICER
COPY: DEPARTMENT HEAD OR
UNIT SUPERVISOR

FORM 068 000 687

TIME STAMP

OUT	IN

IF IN STATION AREA

22. STATION NAME: ____________ STATE: ________
23. ☐ PARKING LOT ☐ STATION ENTRANCE (STREET OR CORNER): ____________
24. SPECIFY: ☐ MEZZANINE #___ ☐ PLATFORM #___ ☐ OTHER: ____________
25. SPECIFY: ☐ PAID AREA ☐ FREE AREA ☐ RESTRICTED AREA
26. ESCALATOR NO.____ ☐ ASCENDING ☐ DESCENDING : STEPPING: ☐ ON ☐ OFF
27. ELEVATOR NO.____ ☐ ENTERING ☐ EXITING : LEVEL: ________
28. INCLINATOR ☐ ENTERING ☐ EXITING
29. STAIRWAY NO.____ ☐ ASCENDING ☐ DESCENDING
30. OTHER AREA IN STATION: ____________

IF IN OTHER AREA

31. LOCATE AND IDENTIFY THE EXACT AREA: ____________

32. NOTE ANY UNUSUAL OR ABNORMAL CONDITIONS AT TIME OF ACCIDENT/INJURY: ____________

33. GIVE FULL ACCOUNT OF CIRCUMSTANCES OF ACCIDENT/INJURY. BE SPECIFIC. DESCRIBE HOW AND WHY THE ACCIDENT/INJURY OCCURRED. IF THE ACCIDENT IS A COLLISION WITH ANOTHER TRAIN OR OTHER TRACK OPERATED EQUIPMENT, IDENTIFY THE OPERATOR AND EQUIPMENT OR TRAIN NUMBER.

(ATTACH SUPPLEMENTAL SHEETS IN TRIPLICATE IF NEEDED)

SUBMITTED BY: ____________ POSITION: ________ DEPARTMENT: ______

DATE: ___/___/___ EMPLOYEE NUMBER: ________ SENIORITY: ____________

FORM [illegible]

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
600 FIFTH STREET, N.W.
WASHINGTON, D.C. 20001

Incident Report

CLASSIFICATION NO. ________

FILE NO. ________________

(FOR OFFICE USE ONLY)

INSTRUCTIONS:

a. USE THIS FORM FOR REPORTING INCIDENTS, UNUSUAL OCCURRENCES, IRREGULARITIES AND PHYSICAL DAMAGE TO AUTHORITY PROPERTY, INCLUDING FIRE DAMAGE, AND WITNESS TO ACCIDENT/INJURY.

b. IN ALL CASES OF ACCIDENT OR PERSONAL INJURY (OTHER THAN EMPLOYEE INJURY) USE "ACCIDENT/INJURY REPORT".

1. DATE OF INCIDENT: ___/___/___ TIME OF INCIDENT: ______ ☐ A.M. ☐ P.M.
2. TYPE OF INCIDENT:
   - ☐ FIRE ☐ EQUIPMENT MALFUNCTION ☐ DERAILMENT (NO INJURY/DAMAGE)
   - ☐ ALTERCATION ☐ CRIMINAL ACT ☐ ASSAULT
   - ☐ TRESPASSER ☐ ARREST OF PERSON ☐ WITNESS TO ACCIDENT/INJURY OR INCIDENT
   - ☐ DAMAGED AUTHORITY FACILITY OR PROPERTY
   - ☐ IRREGULARITY (DESCRIBE)________________
   - ☐ UNUSUAL OCCURRENCE (DESCRIBE)________________
3. DEPARTMENT:____________ DIVISION OR SECTION:____________
4. LOCATION OF INCIDENT:
   STATIONING MARKER NUMBER:______ TRACK NUMBER:____ STATION/YARD NAME:______
   ☐ SURFACE ☐ SUBWAY ☐ AERIAL ☐ SPECIAL WORK ☐ OTHER:______
5. RUN NUMBER:_____ TRAIN NUMBER:_____ CAR NUMBER(S):________
6. IDENTIFY INDIVIDUALS INVOLVED OR WITNESSING THE INCIDENT. (IF AUTHORITY EMPLOYEE, IDENTIFY BY PLACING AN ASTERISK [*] IMMEDIATELY AFTER THE EMPLOYEE'S NAME.)

NAME	ADDRESS	PHONE: HOME	WORK

7. DESCRIBE INCIDENT AND IDENTIFY SPECIFIC LOCATION. (STATE CLEARLY AND FULLY WHAT HAPPENED.)

(CONTINUED ON BACK)

DISTRIBUTION:
ORIGINAL: COUN-CLAIMS
COPY 1 : SAFETY OFFICER
COPY 2 : DEPARTMENT HEAD OR UNIT SUPERVISOR

FORM [illegible]

TIME STAMP

OUT	IN

FORM [illegible]

8. IDENTIFY PROPERTY AND DESCRIBE DAMAGE (INCLUDING FIRE DAMAGE).

9. ACTION TAKEN BY SUBMITTER. (DESCRIBE CORRECTIVE ACTION TAKEN OR NEEDED TO ELIMINATE PROBLEMS)

SUBMITTED BY:

SIGNATURE: ____________ POSITION: ____________
DATE: ___/___/___ EMPLOYEE NO.: ____________ SENIORITY: ________

(TO BE COMPLETED BY SUPERVISOR)

A) ACTION TAKEN BY SUPERVISOR - IF ANY:

B) ADDITIONAL ACTION NEEDED:

SUPERVISOR'S SIGNATURE: ____________ POSITION: ____________
DATE: ___/___/___ EMPLOYEE NO: ____________ SENIORITY: ____________

APPENDIX L

LIST OF REPORTS ORIGINATED BY THE WMATA SAFETY BRANCH

REPORT PAGE

A. Reports Submitted to Federal Regulatory Agencies

1. Form FRA F 6180-45, Annual Summary Report of Railroad Injury and Illness L - 2
2. Form FRA F 6180-54, Railroad Equipment Incident Report L - 4
3. Form FRA F 6180-55, Railroad Injury and Illness Summary L - 5
4. Form FRA F 6180-56, Annual Railroad Report of Manhours L - 7
5. Form FRA F 6180-57, Rail-Highway Grade Crossing Accident/Incident Report L - 8
6. OSHA No. 100, Log of Occupational Injuries and Illnesses L - 9

B. Reports Distributed Internally

1. Rail Passenger Injuries L - 10
2. Total Compensation Cases by Year L - 11
3. Accident by Types L - 12

C. OSHA Inspection Reports

D. Reports Submitted to APTA Statistical Department

1. Heavy Rail Accident Data Exchange Form L - 15
2. Motor Bus Accident Data Exchange Form L - 17
3. Summary All Modes Accident Data Exchange Form L - 19

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

OMB APPROVAL NO
04-R4037

ANNUAL SUMMARY REPORT
of
RAILROAD INJURY AND ILLNESS
(Covering Calendar Year 1977)

COMPLETE THIS REPORT WHETHER OR NOT THERE WERE ANY REPORTABLE OCCUPATIONAL INJURIES OR ILLNESSES.
READ INSTRUCTIONS BEFORE COMPLETING THIS FORM

I. ESTABLISHMENTS INCLUDED IN THIS REPORT

This report should include all establishments located in, or identified by, the reporting railroad. Enter the number of establishments (see definition in the FRA Guide).

1

II. AVERAGE EMPLOYMENT IN REPORTING YEAR

Enter the average number of employees during calendar year. Count all classes of employees, including seasonal, temporary, part-time, etc. See instructions in the FRA Guide for examples of computing your average employment.

850 (Round to the nearest whole number)

III. TOTAL HOURS WORKED IN REPORTING YEAR

Enter the total number of hours actually worked by all employees. DO NOT include any non-work time even though paid, such as vacations, sick leave, holidays, etc.

1,528,200 (Round to the nearest whole number)

IV. REPORTABLE INJURIES AND ILLNESSES

Did you have any reportable injuries or illnesses during the reporting year? (Check one)

(1) ☐ No - complete Section VII,

(2) ☒ Yes - complete Sections V, VI and VII.

V. MONTHLY DATA OF REPORTABLE INJURIES AND ILLNESSES

Of the Total Reportable Occupational Injuries and Illnesses (Section VI, Line 10 column 1), how many occurred in the following months?

Calendar Year

Jan.	13	Apr.	18	July	32	Oct.	23
Feb.	9	May	10	Aug.	20	Nov.	36
Mar.	11	June	16	Sept.	34	Dec.	17

CORPORATE NAME AND MAILING ADDRESS OF REPORTING RAILROAD →

Name: Washington Metropolitan Area Transit Authority

Alphabetic Railroad Code (See FRA Guide, Appendix A): XWMA

STREET: 600 Fifth Street N.W.

CITY: Washington
STATE: D.C. 20001
ZIP CODE:

FORM FRA F6130-45 (7-76)
PREVIOUS EDITIONS ARE OBSOLETE.

This report is required by regulation (49 CFR 225). Failure to report can result in the imposition of civil penalties.

VI. INJURY AND ILLNESS SUMMARY (Covering Calendar Year 1977)

INSTRUCTIONS:
- This section may be completed by Copying data from the "Annual Summary" which you are required to complete and post in your establishment.
- Leave Section VI blank if there were no reportable injuries or illnesses during the reporting year.
- Line 9 – Add all Occupational Illnesses (Lines 2 through 8) and enter on this line for each column (1) through (8).
- Line 10 - Add Occupational Injuries (Line 1) and the sum of all Occupational Illnesses (Line 9) and enter on this line for each column (1) through (8).

					LOST WORKDAY CASES ONLY					
LINE		INJURY AND ILLNESS CATEGORY	TOTAL CASES (1)	DEATHS (2)	Total lost workday cases (includes restricted workday cases) (3)	Cases involving days away from work (4)	Days away from work (5)	Days of restricted work activity (6)	NONFATAL CASES WITHOUT LOST WORKDAYS (7)	TERMINATIONS OR PERMANENT TRANSFERS (8)
1		OCCUPATIONAL INJURIES	239		92	92	1,114	147		
2	OCCUPATIONAL ILLNESSES	Occupational Skin Diseases or Disorders								
3		Dust Diseases of the Lungs								
4		Respiratory Conditions Due to Toxic Agents								
5		Poisoning (Systemic Effects of Toxic Materials)								
6		Disorders Due to Physical Agents								
7		Disorders Associated With Repeated Trauma								
8		All Other Occupational Illnesses								
9		TOTAL OCCUPATIONAL ILLNESSES (Add Lines 2 through 8)								
10		TOTAL OCCUPATIONAL INJURIES AND ILLNESSES (Add Lines 1 and 9)	239		92	92	1,114	147		

VII. COMMENTS:

Report prepared by: Frank E. Lambert
Area Code and Phone: 202-637-1023
Title: Supervisory Safety Specialist
Date: 1/27/78

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

RAIL EQUIPMENT INCIDENT REPORT

FORM APPROVED
OMB NO. [illegible]

1. NAME OF REPORTING RAILROAD — Amtrak ☐ Autotrain ☐ — 1a. Alphabetic Code — 1b. Railroad Incident No.

2. NAME OF OTHER RAILROAD INVOLVED IN TRAIN INCIDENT — 2a. Alphabetic Code — 2b. Railroad Incident No.

3. NAME OF RAILROAD RESPONSIBLE FOR TRACK MAINTENANCE *(single entry)* — 3a. Alphabetic Code — 3b. Railroad Incident No.

4. U.S. DOT-AAR GRADE CROSSING IDENTIFICATION NUMBER — 5. DATE OF INCIDENT month | day | year — 6. TIME OF INCIDENT am ☐ pm ☐

7. TYPE OF INCIDENT *(enter number in code box, single entry)* — CODE
1. Derailment 2. Head on collision 3. Rear end collision 4. Side collision 5. Raking collision 6. Broken train collision 7. Hwy grade crossing 8. RR grade crossing 9. Obstruction 10. Explosion-Detonation 11. Fire or violent rupture 12. Other *(specify)*

HAZARDOUS MATERIALS *(number of)*

8. CARS CARRYING — 9. CARS DAMAGED OR DERAILED — 10. CARS WHICH RELEASED HAZ. MAT. — 11. PEOPLE EVACUATED *(est.)*

LOCATION

12. DIVISION — 13. NEAREST STATION — 14. MILEPOST *(to nearest tenth)* — 15. STATE *(two letter code)* — CODE

ENVIRONMENTAL CONDITIONS

16. TEMPERATURE *(specify if minus)* °F — 17. VISIBILITY *(single entry)* 1. Dawn 2. Day 3. Dusk 4. Dark — CODE — 18. WEATHER *(single entry)* 1. Clear 2. Cloudy 3. Rain 4. Fog 5. Sleet 6. Snow — CODE

OPERATIONAL DATA

19. METHOD *(place X in appropriate box(es))*
1 ☐ Manual block
2 ☐ Interlocking
3 ☐ Cab signal
4 ☐ Automatic block
5 ☐ Traffic control
6 ☐ Auto. train stop
7 ☐ Yard rules
8 ☐ Time table
9 ☐ Radio
10 ☐ Auto. train control
11 ☐ Verbal permission
12 ☐ Train orders
13 ☐ Other *(specify)*

20. SPEED *(recorded speed, if available)* Est. ☐ MPH Recorded ☐ — 21. TRAIN NUMBER — 22. TIME TABLE DIRECTION 1. North 2. South 3. East 4. West — CODE

EQUIPMENT

23. TRAILING TONS *(gross tonnage, excluding power units)* — 24. TYPE OF EQUIPMENT CONSIST *(single entry)* 1. Freight train 2. Passenger train 3. Mixed train 4. Work train 5. Single car 6. Cut of cars 7. Yard/switching 8. Light loco(s) — CODE — 25. WAS THE EQUIPMENT IDENTIFIED IN ITEM 24 UNATTENDED? 1. Yes 2. No — CODE

26. TRACK NUMBER OR NAME — 27. FRA TRACK CLASSIFICATION — 28. ANNUAL TRACK DENSITY *(gross tons in millions)* — 29. TYPE OF TRACK 1. Main 2. Yard 3. Siding 4. Industry — CODE

30. PRINCIPLE CAR/UNIT	30a. Initial and Number	30b. Position in Train	30c. Loaded *(yes or no)*
(1) First involved *(derailed, struck, striking, etc.)*			
(2) Causing *(mechanical failure)*			

31. LOCOMOTIVE UNITS *(no. of)*	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End e. Remote
(1) Total in Train					
(2) Total Derailed					

32. CARS *(no. of)*	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist					
(2) Total Derailed					

PROPERTY DAMAGE *(estimated cost, including labor, to repair or replace)*

33. EQUIPMENT DAMAGE *(to be reported for this equipment consist only)* $ — 34. TRACK, SIGNAL, WAY AND STRUCTURES DAMAGE *(to be reported by railroad in item 3 only)* $

INCIDENT CAUSE CODE

35. PRIMARY CAUSE — CODE — 36. CONTRIBUTING CAUSE — CODE — 37. If no code available, explain cause.

CASUALTIES

38. NUMBER OF PERSONS INJURED — 39. ESTIMATED TOTAL DAYS DISABILITY — 40. NUMBER OF FATALITIES

CREW *(no. of)*

41. ENGINEERS — 42. FIREMEN — 43. CONDUCTORS — 44. BRAKEMEN

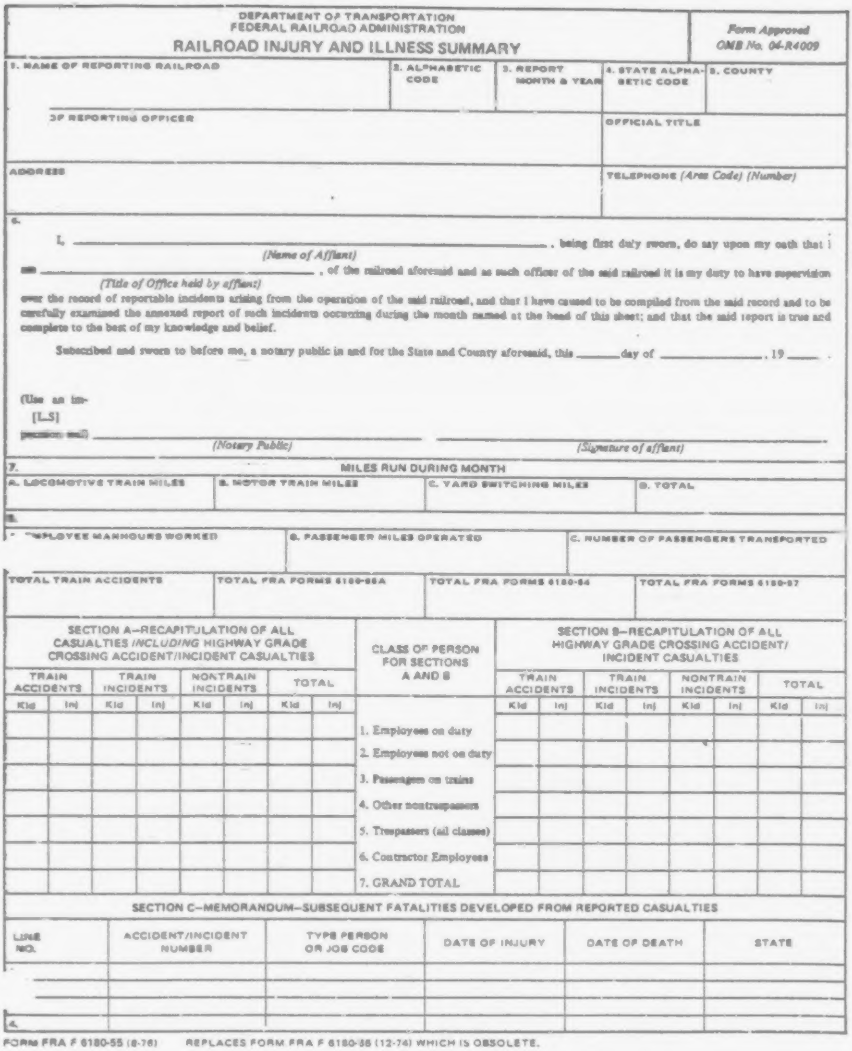
HOURS ON DUTY

45. ENGINEER Hrs: Mins: — 46. CONDUCTOR Hrs: Mins:

47. TYPED NAME AND TITLE — 48. SIGNATURE — 49. DATE

50. NARRATIVE DESCRIPTION – *Describe the cause, nature and circumstances of incident.*

FORM FRA F 6180-54 (5-74) REPLACES FORM FRA F 6180-10 (11-72) WHICH IS OBSOLETE



DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

RAILROAD INJURY AND ILLNESS SUMMARY

Form Approved
OMB No. 04-R4009

1. NAME OF REPORTING RAILROAD	2. ALPHABETIC CODE	3. REPORT MONTH & YEAR	4. STATE ALPHABETIC CODE	5. COUNTY
OF REPORTING OFFICER			OFFICIAL TITLE	
ADDRESS			TELEPHONE *(Area Code) (Number)*	

6.

I, ______________________________ *(Name of Affiant)*, being first duly sworn, do say upon my oath that I am ______________________ *(Title of Office held by affiant)*, of the railroad aforesaid and as such officer of the said railroad it is my duty to have supervision over the record of reportable incidents arising from the operation of the said railroad, and that I have caused to be compiled from the said record and to be carefully examined the annexed report of such incidents occurring during the month named at the head of this sheet; and that the said report is true and complete to the best of my knowledge and belief.

Subscribed and sworn to before me, a notary public in and for the State and County aforesaid, this ______ day of ______________, 19____.

(Use an im-
[L.S]
pression seal) ______________________ *(Notary Public)*

______________________ *(Signature of affiant)*

7. MILES RUN DURING MONTH			
A. LOCOMOTIVE TRAIN MILES	B. MOTOR TRAIN MILES	C. YARD SWITCHING MILES	D. TOTAL
8.			
MPLOYEE MANHOURS WORKED	B. PASSENGER MILES OPERATED	C. NUMBER OF PASSENGERS TRANSPORTED	
TOTAL TRAIN ACCIDENTS	TOTAL FRA FORMS 6180-55A	TOTAL FRA FORMS 6180-54	TOTAL FRA FORMS 6180-57

SECTION A—RECAPITULATION OF ALL CASUALTIES *INCLUDING* HIGHWAY GRADE CROSSING ACCIDENT/INCIDENT CASUALTIES								CLASS OF PERSON FOR SECTIONS A AND B	SECTION B—RECAPITULATION OF ALL HIGHWAY GRADE CROSSING ACCIDENT/INCIDENT CASUALTIES							
TRAIN ACCIDENTS		TRAIN INCIDENTS		NONTRAIN INCIDENTS		TOTAL			TRAIN ACCIDENTS		TRAIN INCIDENTS		NONTRAIN INCIDENTS		TOTAL	
Kld	Inj	Kld	Inj	Kld	Inj	Kld	Inj		Kld	Inj	Kld	Inj	Kld	Inj	Kld	Inj
								1. Employees on duty								
								2. Employees not on duty								
								3. Passengers on trains								
								4. Other nontrespassers								
								5. Trespassers (all classes)								
								6. Contractor Employees								
								7. GRAND TOTAL								

SECTION C—MEMORANDUM—SUBSEQUENT FATALITIES DEVELOPED FROM REPORTED CASUALTIES

LINE NO.	ACCIDENT/INCIDENT NUMBER	TYPE PERSON OR JOB CODE	DATE OF INJURY	DATE OF DEATH	STATE
4.					

FORM FRA F 6180-55 (8-76) REPLACES FORM FRA F 6180-55 (12-74) WHICH IS OBSOLETE.

This report is required by law (45 USC 40). Failure to report can result in the imposition of civil penalties.

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

RAILROAD INJURY AND ILLNESS SUMMARY

(CONTINUATION SHEET)

FORM APPROVED
OMB NO. 04R4035

SHEET ____ OF ____

ME OF REPORTING RAILROAD	2. ALPHABETIC CODE	3. REPORT MONTH

CASUALTIES (Cont.)

a. INCIDENT NUMBER	b. TYPE PERSON OR JOB CODE	c. INJURY OR ILLNESS CODE	d. OCCURRENCE CODE	e. AGE	f. NUMBER OF DAYS AWAY FROM WORK	g. NUMBER OF DAYS OF RESTRICTED ACTIVITY	h. CASES WITH-OUT LOST WORK DAYS	i. STATE ALPHABETIC CODE

FORM FRA F 6180-55a (6-74)

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

FORM APPROVED
OMB NO. 04R4034

ANNUAL RAILROAD REPORT
OF
MANHOURS BY STATE

1. REPORTING RAILROAD
Washington Metropolitan Area Transit Authority

ALPHABETIC CODE
XWMA

2. REPORT YEAR
1977

3. ANNUAL MANHOURS

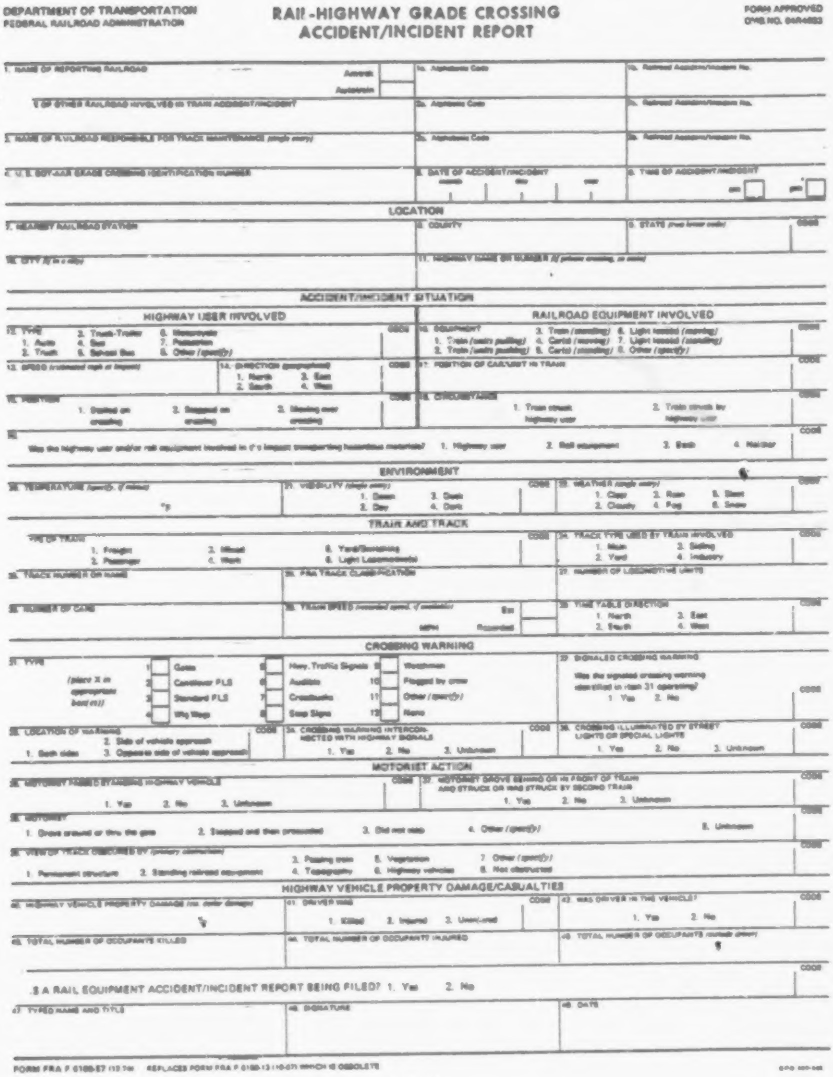
A. STATE	B. CODE	C. M/HRS.	A. STATE	B. CODE	C. M/HRS.
(1) ALABAMA	AL		(26) MONTANA	MT	
(2) ALASKA	AK		(27) NEBRASKA	NE	
(3) ARIZONA	AZ		(28) NEVADA	NV	
(4) ARKANSAS	AR		(29) NEW HAMPSHIRE	NH	
(5) CALIFORNIA	CA		(30) NEW JERSEY	NJ	
(6) COLORADO	CO		(31) NEW MEXICO	NM	
(7) CONNECTICUT	CT		(32) NEW YORK	NY	
(8) DELAWARE	DE		(33) NORTH CAROLINA	NC	
(9) DISTRICT OF COLUMBIA	DC	1,528,200	(34) NORTH DAKOTA	ND	
(10) FLORIDA	FL		(35) OHIO	OH	
(11) GEORGIA	GA		(36) OKLAHOMA	OK	
(12) IDAHO	ID		(37) OREGON	OR	
(13) ILLINOIS	IL		(38) PENNSYLVANIA	PA	
(14) INDIANA	IN		(39) RHODE ISLAND	RI	
(15) IOWA	IA		(40) SOUTH CAROLINA	SC	
(16) KANSAS	KS		(41) SOUTH DAKOTA	SD	
(17) KENTUCKY	KY		(42) TENNESSEE	TN	
(18) LOUISIANA	LA		(43) TEXAS	TX	
(19) MAINE	ME		(44) UTAH	UT	
(20) MARYLAND	MD		(45) VERMONT	VT	
(21) MASSACHUSETTS	MA		(46) VIRGINIA	VA	
(22) MICHIGAN	MI		(47) WASHINGTON	WA	
(23) MINNESOTA	MN		(48) WEST VIRGINIA	WV	
(24) MISSISSIPPI	MS		(49) WISCONSIN	WI	
(25) MISSOURI	MO		(50) WYOMING	WY	

4. TYPED NAME AND TITLE
Frank E. Lambert Supervisory Saf. Spec.

5. SIGNATURE

6. DATE
1/27/78

FORM FRA F 6180-56 (8-74) SUBMIT THIS FORM WITH THE FRA F 6180-55, DECEMBER REPORT.



DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

RAIL-HIGHWAY GRADE CROSSING ACCIDENT/INCIDENT REPORT

FORM APPROVED
OMB NO. 04R4083

1. NAME OF REPORTING RAILROAD — Amtrak ☐ Autotrain ☐
1a. Alphabetic Code
1b. Railroad Accident/Incident No.
2. NAME OF OTHER RAILROAD INVOLVED IN TRAIN ACCIDENT/INCIDENT
2a. Alphabetic Code
2b. Railroad Accident/Incident No.
3. NAME OF RAILROAD RESPONSIBLE FOR TRACK MAINTENANCE (single entry)
3a. Alphabetic Code
3b. Railroad Accident/Incident No.
4. U.S. DOT-AAR GRADE CROSSING IDENTIFICATION NUMBER
5. DATE OF ACCIDENT/INCIDENT — month day year
6. TIME OF ACCIDENT/INCIDENT — am ☐ pm ☐

LOCATION

7. NEAREST RAILROAD STATION
8. COUNTY
9. STATE (two letter code) — CODE
10. CITY (if in a city)
11. HIGHWAY NAME OR NUMBER (if private crossing, so state)

ACCIDENT/INCIDENT SITUATION

HIGHWAY USER INVOLVED

12. TYPE — 1. Auto 2. Truck 3. Truck-Trailer 4. Bus 5. School Bus 6. Motorcycle 7. Pedestrian 8. Other (specify) — CODE
13. SPEED (estimated mph at impact)
14. DIRECTION (geographical) — 1. North 2. South 3. East 4. West — CODE
15. POSITION — 1. Stalled on crossing 2. Stopped on crossing 3. Moving over crossing — CODE

RAILROAD EQUIPMENT INVOLVED

16. EQUIPMENT — 1. Train (units pulling) 2. Train (units pushing) 3. Train (standing) 4. Car(s) (moving) 5. Car(s) (standing) 6. Light loco(s) (moving) 7. Light loco(s) (standing) 8. Other (specify) — CODE
17. POSITION OF CAR/UNIT IN TRAIN — CODE
18. CIRCUMSTANCE — 1. Train struck highway user 2. Train struck by highway user — CODE

19. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? 1. Highway user 2. Rail equipment 3. Both 4. Neither — CODE

ENVIRONMENT

20. TEMPERATURE (specify if minus) °F
21. VISIBILITY (single entry) — 1. Dawn 2. Day 3. Dusk 4. Dark — CODE
22. WEATHER (single entry) — 1. Clear 2. Cloudy 3. Rain 4. Fog 5. Sleet 6. Snow — CODE

TRAIN AND TRACK

23. TYPE OF TRAIN — 1. Freight 2. Passenger 3. Mixed 4. Work 5. Yard/Switching 6. Light Locomotive(s) — CODE
24. TRACK TYPE USED BY TRAIN INVOLVED — 1. Main 2. Yard 3. Siding 4. Industry — CODE
25. TRACK NUMBER OR NAME
26. FRA TRACK CLASSIFICATION
27. NUMBER OF LOCOMOTIVE UNITS
28. NUMBER OF CARS
29. TRAIN SPEED (recorded speed, if available) — MPH — Est ☐ Recorded ☐
30. TIME TABLE DIRECTION — 1. North 2. South 3. East 4. West — CODE

CROSSING WARNING

31. TYPE (place X in appropriate box(es))
1 ☐ Gates
2 ☐ Cantilever FLS
3 ☐ Standard FLS
4 ☐ Wig Wags
5 ☐ Hwy. Traffic Signals
6 ☐ Audible
7 ☐ Crossbucks
8 ☐ Stop Signs
9 ☐ Watchman
10 ☐ Flagged by crew
11 ☐ Other (specify)
12 ☐ None

32. SIGNALED CROSSING WARNING — Was the signaled crossing warning identified in item 31 operating? 1. Yes 2. No — CODE
33. LOCATION OF WARNING — 1. Both sides 2. Side of vehicle approach 3. Opposite side of vehicle approach — CODE
34. CROSSING WARNING INTERCONNECTED WITH HIGHWAY SIGNALS — 1. Yes 2. No 3. Unknown — CODE
35. CROSSING ILLUMINATED BY STREET LIGHTS OR SPECIAL LIGHTS — 1. Yes 2. No 3. Unknown — CODE

MOTORIST ACTION

36. MOTORIST PASSED STANDING HIGHWAY VEHICLE — 1. Yes 2. No 3. Unknown — CODE
37. MOTORIST DROVE BEHIND OR IN FRONT OF TRAIN AND STRUCK OR WAS STRUCK BY SECOND TRAIN — 1. Yes 2. No 3. Unknown — CODE
38. MOTORIST — 1. Drove around or thru the gate 2. Stopped and then proceeded 3. Did not stop 4. Other (specify) 5. Unknown — CODE
39. VIEW OF TRACK OBSCURED BY (primary obstruction) — 1. Permanent structure 2. Standing railroad equipment 3. Passing train 4. Topography 5. Vegetation 6. Highway vehicles 7. Other (specify) 8. Not obstructed — CODE

HIGHWAY VEHICLE PROPERTY DAMAGE/CASUALTIES

40. HIGHWAY VEHICLE PROPERTY DAMAGE (est. dollar damage) $
41. DRIVER WAS — 1. Killed 2. Injured 3. Uninjured — CODE
42. WAS DRIVER IN THE VEHICLE? — 1. Yes 2. No — CODE
43. TOTAL NUMBER OF OCCUPANTS KILLED
44. TOTAL NUMBER OF OCCUPANTS INJURED
45. TOTAL NUMBER OF OCCUPANTS (include driver)

46. IS A RAIL EQUIPMENT ACCIDENT/INCIDENT REPORT BEING FILED? 1. Yes 2. No — CODE

47. TYPED NAME AND TITLE
48. SIGNATURE
49. DATE

FORM FRA F 6180-57 (12-74) REPLACES FORM FRA F 6180-13 (10-67) WHICH IS OBSOLETE

OSHA NO. 100

RECORDA
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job, or n
More compl

LOG OF OCCUPATIONAL INJURIES AND ILLNESSES

					DESCRIPTION O
CASE OR FILE NUMBER (1)	DATE OF INJURY OR ONSET OF ILLNESS Mo./day/yr. (2)	EMPLOYEE'S NAME (First name or initial, middle initial, last name) (3)	OCCUPATION (Enter regular job title, not activity employee was performing when injured or at onset of illness.) (4)	DEPARTMENT (Enter department in which the employee is regularly employed.) (5)	Nature of Injury or Illn Body Affected (Typical entries for this Amputation of 1st joint Strain of lower back Contact dermatitis on b Electrocution—body) (6)

Company Name ______________________
Establishment Name ______________________
'ablishment Address ______________________

NOTE: This is NOT a report form. Keep it in the establishment for 5 years.

21 Occupa
22 Dust d
23 Respira
24 Poison

RAIL PASSENGER INJURIES FOR FY 77

JULY 76	9	
AUGUST 76	7	
SEPTEMBER 76	7	
OCTOBER 76	2	
NOVEMBER 76	1	
DECEMBER 76	6	Total ----32

JANUARY	77	5	
FEBUARY	77	4	
MARCH	77	5	
APRIL	77	3	
MAY	77	5	
JUNE	77	6	Total---- 28

LIABILITIES/PERSONAL PROPERTY

JANUARY	77	12	JULY	76	-
FEBRUARY	77	3	AUGUST	76	2
MARCH	77	3	SEPTEMBER	76	1
APRIL	77	2	OCTOBER	76	-
MAY	77	3	NOVEMBER	76	1
JUNE	77	2	DECEMBER	76	-
		Total --25			Total-- 4

TOTAL COMPENSATION CASES FOR FY 77

TRANSPORTATION

Total	1442
Operational	1367
Non-Operational	75

MAINTENANCE

Total	624

OCCB

Total	82

Sure

OCCB	13
Bladensburg	3

Rail

Total	89
Compensation	60
Liabilities	29

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

ACCIDENT BY TYPES

Passenger Accidents

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
jured Boarding												
jured Alighting												
Board												
Thrown by Starting												
Thrown by Stopping												
Thrown by Running												
Other Occurrences												
Miscellaneous												
TOTAL												
Collision Accidents												
th Another Company Vehicle												
ehicle Ahead												
th Vehicle Following												
th Vehicle Passing On ft												
th Vehicle Passing On ght												
th Vehicle Being Passed Right of Bus												
th Vehicle Being Passed Left of Bus												
th Vehicle From An Angle												
th Vehicle Being Met Passed												
th Motorcycle or Bicycle												
th Other Object												
th Fixed Object												
th Person												
TOTAL												

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

METROBUS
OPERATING ACCIDENTS AND ACCIDENT RATES

NUMBER OF ACCIDENTS

	JUNE 1976	JUNE 1977	PERCENT CHANGE
All Operating Accidents	419	376	Minus 10.26
Reported	389	334	
Unreported	30	42	
All Collisions	323	275	Minus 14.86
Reported	319	262	
Unreported	4	13	
Pedestrian Collisions	6	9	Plus 50.00
Reported	5	8	
Unreported	1	1	
Other Collisions	317	266	Minus 16.09
Reported	314	254	
Unreported	3	12	
Passenger Accidents	96	101	Plus 5.21
Reported	70	72	
Unreported	26	29	
Miles Operated (000)	4,946	4,772	Minus 3.52
	COLLISION RATES PER 100,000 MILES		
All Collisions	6.53	5.76	Minus 11.79
Reported	6.45	5.49	
Unreported	.08	.27	
Pedestrian Collisions	.12	.19	Plus 58.33
Reported	.10	.17	
Unreported	.02	.02	
Other Collisions	6.41	5.57	Minus 13.10
Reported	6.35	5.32	
Unreported	.06	.25	

PASSENGER ACCIDENT RATES PER MILLION PASSENGERS

JUNE 1976	JUNE 1977	PERCENT CHANGE

Due to the new fare structure instituted March 21, 1977 no passengers shall be calculated until a new average fare has been determined.

OPERATING ACCIDENT AND ACCIDENT RATES SINCE JANUARY 1 (Including Unreported)

	NUMBER OF ACCIDENTS			
	1976	1977		
All Collisions	2,147	1,775	Minus	17.33
Collisions with pedestrians	46	52	Plus	13.04
Other Collisions	2,101	1,723	Minus	17.99
Passenger Accidents	586	602	Plus	2.73
Miles Operated (000)	29,149	27,983	Minus	4.00

	RATES PER 100,000 MILES			
All Collisions	7.37	6.34	Minus	13.98
Collisions with pedestrians	.16	.18	Plus	12.50
Other Collisions	7.21	6.16	Minus	14.56
Passenger Accidents	2.01	2.15	Plus	6.97

DISTRIBUTION:

GMGR - Lutz, Boleyn
RAIL - Wood
REAL - Roll
TRSV - McAmis, Flynn, Lambert, Muldoon, McGivern
BUSV - Trimmer, Price, Schoenfeldt, Fluharty (2), Ford, Adams, Each Division (2)
COUN - Kennedy
CLMS - Loesch
MNTN - Lawson, Randolph
SECT - Ison, Halloran

Issued 10/11/77 by TRSV Safety Officer

American Public Transit Association
1100 17th Street, N.W., Suite 1200
Washington, DC 20036
(202) 331-1100

ACCIDENT DATA EXCHANGE

(Calendar Year 1976 and Calendar Year 1975)

Form ADE 05-77
2 Pages

APTA Statistical Department
May 1977

Motor Bus ☐ Heavy Rail ☒ Light Rail ☐ Trolley Coach ☐
Cable Car ☐ Inclined Plane ☐ Summary All Modes ☐

Transit System WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

Mailing Address 600 - 5th Street, N. W.

City Washington, State/Province D.C. Zip Code Postal Code 20001

Prepared by Frank E. Lambert (typed name) / (written signature)

Title Supervisory Safety Specialist Telephone (202) 637 - 1021 ext.

Submitted by Donald M. McAmis (typed name) / Donald M. McAmis (written signature)

Title Safety Officer Telephone (202) 637 - 1027 ext.

FATALITIES

Category	Calendar Year	
	1976	1975
1. Employee Fatalities	NONE	NONE
2. Passenger Fatalities	NONE	NONE
3. Pedestrian Fatalities	NONE	NONE
4. Other Fatalities	NONE	NONE

ACCIDENT DATA

Category	Calendar Year		Leave Blank For APTA Statistical Department Use Only	
	1976	1975		
Transit System Operating Statistics				
1. Vehicle Miles Operated (Total)	744,936			
2. Passengers Carried (Total)	3,960,744			
Traffic Accidents				
3. Collisions with Pedestrians				
4. Collisions between System Passenger Vehicles				
5. Collisions with Other Vehicles				
6. Collisions with Fixed Objects	1			
7. Derailment, Split, Open Switch	3			
8. Overhead Wire/Third Rail Accidents				
9. Other Traffic Accidents	6			
10. Total Traffic Accidents	10			

Transit System [redacted] Form [redacted]

Mode of Service HEAVY RAIL Page 2

ACCIDENT DATA, continued.

Category	Calendar Year		Leave Blank For APTA Statistical Department Use Only	
	1976	1975		
Passenger Accidents				
11. Boarding (Excluding Doors)	6			
12. Alighting (Excluding Doors)	3			
13. Caught/Struck by Doors: Boarding	2			
14. Caught/Struck by Doors: Alighting	1			
15. Caught/Struck by Doors: Between Cars (Rail Vehicles Only)				
16. On Board Passenger Vehicle	3			
17. Other Passenger Accidents	2			
18. Total Passenger Accidents	17			
Station Accidents				
19. Stairs	1			
20. Escalators	37			
21. Mezzanines	3			
22. Turnstiles	1			
23. Corridors/Passages	1			
24. Platforms	5			
25. Tracks				
26. Other Station Accidents	6			
27. Total Station Accidents	54			

Do the above traffic accident data (Items 3 thru 10) include "traffic accidents" which did not result in damage either to the transit vehicle or to any other object involved in the "accident"? YES ☒ NO ☐

Do the above passenger accident data (Items 11 thru 18) include passenger accidents wherein passenger injuries resulted from a vehicle accident in the first event, i.e., the passenger injury occurred during and as a result of a vehicle accident? YES ☐ NO ☒

Do the above accident data include all "blind" or "no report" cases not originally reported by operating personnel? YES ☒ NO ☐

If "NO", how many such occurrances of "blind" or "no report" traffic accidents did you have? 1976 ______ 1975 ______

If "NO", how many such occurrances of "blind" or "no report" passenger accidents did you have? 1976 ______ 1975 ______

Do the above accident data include all reported accidents irrespective of the responsibility of your operating personnel? YES ☒ NO ☐

If "NO", please explain: NOTE: These figures do not correspond with reports made to FRA. Here we have reported all accidents, while FRA requires only property damage and accidents over a certain threshold value.

Please complete and return this form to APTA no later than June 30, 1977.

Please address to Mr. John Neff, Assistant Manager of Statistics,
American Public Transit Association,
1100 17th Street, N.W., Suite 1200
Washington, DC 20036

American Public Transit Association
1100 17th Street, N.W., Suite 1200
Washington, DC 20036
(202) 331-1100

ACCIDENT DATA EXCHANGE

(Calendar Year 1976 and Calendar Year 1975)

Form ADE 05-77
2 Pages

APTA Statistical Department
May 1977

Motor Bus ☒ Heavy Rail ☐ Light Rail ☐ Trolley Coach ☐
Cable Car ☐ Inclined Plane ☐ Summary All Modes ☐

Transit System WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

Mailing Address 600 - 5th Street, N. W.

City Washington, State/Province D.C. Zip Code/Postal Code 20001

Prepared by Frank E. Lambert (typed name) / (written signature)

Title Supervisory Safety Specialist Telephone (202) 637 - 1023 ext.

Submitted by Donald M. McAmis (typed name) / Donald M. McAmis (written signature)

Title Safety Officer Telephone (202) 637 - 1027 ext.

FATALITIES

Category	Calendar Year	
	1976	1975
1. Employee Fatalities	NONE	NONE
2. Passenger Fatalities	NONE	NONE
3. Pedestrian Fatalities	5	4
4. Other Fatalities	2	3

ACCIDENT DATA

Category	Calendar Year		Leave Blank For APTA Statistical Department Use Only
	1976	1975	
Transit System Operating Statistics			
1. Vehicle Miles Operated (Total)	57,320,000	57,959,339	
2. Passengers Carried (Total)	178,918,700	168,339,571	
Traffic Accidents			
3. Collisions with Pedestrians	92	122	
4. Collisions between System Passenger Vehicles	156	472	
5. Collisions with Other Vehicles	3,373	3,737	
6. Collisions with Fixed Objects	225	412	
7. Derailment, Split, Open Switch		---	
8. Overhead Wire Third Rail Accidents		---	
9. Other Traffic Accidents		---	
10. Total Traffic Accidents	3,846	4,743	

Transit System [redacted] Form [redacted]

Mode of Service MOTOR BUS Page 2

ACCIDENT DATA, continued

Category	Calendar Year		Leave Blank For APTA Statistical Department Use Only	
	1976	1975		
Passenger Accidents				
11. Boarding (Excluding Doors)	113	153		
12. Alighting (Excluding Doors)	182	245		
13. Caught/Struck by Doors: Boarding	---	---		
14. Caught/Struck by Doors: Alighting	---	---		
15. Caught/Struck by Doors: Between Cars (Rail Vehicles Only)	---	---		
16. On Board Passenger Vehicle	853	767		
17. Other Passenger Accidents	---	---		
18. Total Passenger Accidents	1,148	1,165		
Station Accidents				
19. Stairs				
20. Escalators				
21. Mezzanines				
22. Turnstiles				
23. Corridors/Passages				
24. Platforms				
25. Tracks				
26. Other Station Accidents				
27. Total Station Accidents				

Do the above traffic accident data (Items 3 thru 10) include "traffic accidents" which did not result in damage either to the transit vehicle or to any other object involved in the "accident"? YES ☒ NO ☐

Do the above passenger accident data (Items 11 thru 18) include passenger accidents wherein passenger injuries resulted from a vehicle accident in the first event, i.e., the passenger injury occurred during and as a result of a vehicle accident?
YES ☒ NO ☐

Do the above accident data include all "blind" or "no report" cases not originally reported by operating personnel? YES ☒ NO ☐

If "NO", how many such occurrances of "blind" or "no report" traffic accidents did you have? 1976 ________ 1975 ________

If "NO", how many such occurrances of "blind" or "no report" passenger accidents did you have? 1976 ________ 1975 ________

Do the above accident data include all reported accidents irrespective of the responsibility of your operating personnel? YES ☒ NO ☐

If "NO", please explain: ________________________

Please complete and return this form to APTA no later than June 30, 1977.
Please address to Mr. John Neff, Assistant Manager of Statistics,
American Public Transit Association,
1100 17th Street, N.W., Suite 1200
Washington, DC 20036

American Public Transit Association
1100 17th Street, N.W., Suite 1200
Washington, DC 20036
(202) 331-1100

ACCIDENT DATA EXCHANGE

(Calendar Year 1976 and Calendar Year 1975)

Form ADE 05-77
2 Pages

APTA Statistical Department
May 1977

Motor Bus ☐ Heavy Rail ☐ Light Rail ☐ Trolley Coach ☐
Cable Car ☐ Inclined Plane ☐ Summary All Modes ☒

Transit System WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

Mailing Address 600 - 5th Street, N. W.

City Washington, State/Province D.C. Zip Code Postal Code 20001

Prepared by Frank E. Lambert (typed name) / (written signature)

Title Supervisory Safety Specialist Telephone (202) 637 - 1023 ext.

Submitted by Donald M. McAmis (typed name) / Donald M. McAmis (written signature)

Title Safety Officer Telephone (202) 637 - 1027 ext.

FATALITIES

Category	Calendar Year	
	1976	1975
1. Employee Fatalities	NONE	NONE
2. Passenger Fatalities	NONE	NONE
3. Pedestrian Fatalities	5	4
4. Other Fatalities	2	3

ACCIDENT DATA

Category	Calendar Year		Leave Blank For APTA Statistical Department Use Only	
	1976	1975		
Transit System Operating Statistics				
1. Vehicle Miles Operated (Total)	58,568,886	57,959,339		
2. Passengers Carried (Total)	182,879,444	168,399,671		
Traffic Accidents				
3. Collisions with Pedestrians	92	122		
4. Collisions between System Passenger Vehicles	156	472		
5. Collisions with Other Vehicles	3,374	3,737		
6. Collisions with Fixed Objects	226	412		
7. Derailment, Split/Open Switch	3			
8. Overhead Wire/Third Rail Accidents				
9. Other Traffic Accidents	5			
10. Total Traffic Accidents	3,856	4,743		

Transit System [redacted] Form [redacted]

Mode of Service ALL MODES COMBINED Page 2

ACCIDENT DATA, continued

Category	Calendar Year		Leave Blank For APTA Statistical Department Use Only	
	1976	1975		
Passenger Accidents				
11. Boarding (Excluding Doors)	119	153		
12. Alighting (Excluding Doors)	135	245		
13. Caught/Struck by Doors: Boarding	2			
14. Caught/Struck by Doors: Alighting	1			
15. Caught/Struck by Doors: Between Cars (Rail Vehicles Only)				
16. On Board Passenger Vehicle	856	767		
17. Other Passenger Accidents	2			
18. Total Passenger Accidents	1,165	1,166		
Station Accidents				
19. Stairs	1			
20. Escalators	37			
21. Mezzanines	3			
22. Turnstiles	1			
23. Corridors/Passages	1			
24. Platforms	5			
25. Tracks				
26. Other Station Accidents	6			
27. Total Station Accidents	54			

Do the above traffic accident data (Items 3 thru 10) include "traffic accidents" which did not result in damage either to the transit vehicle or to any other object involved in the "accident"? YES ☒ NO ☐

Do the above passenger accident data (Items 11 thru 18) include passenger accidents wherein passenger injuries resulted from a vehicle accident in the first event, i.e., the passenger injury occurred during and as a result of a vehicle accident?
Bus ← YES ☒ NO ☒ - Rail

Do the above accident data include all "blind" or "no report" cases not originally reported by operating personnel? YES ☒ NO ☐

If "NO", how many such occurrences of "blind" or "no report" traffic accidents did you have? 1976 ________ 1975 ________

If "NO", how many such occurrences of "blind" or "no report" passenger accidents did you have? 1976 ________ 1975 ________

Do the above accident data include all reported accidents irrespective of the responsibility of your operating personnel? YES ☒ NO ☐

If "NO", please explain: ____________________

Please complete and return this form to APTA no later than June 30, 1977.

Please address to Mr. John Neff, Assistant Manager of Statistics,
American Public Transit Association,
1100 17th Street, N.W., Suite 1200
Washington, DC 20036

APPENDIX M

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

Safe Driver Award Program

I. Rules Governing Qualification For Annual Safe Driver Awards

A. Operator must be a full-time permanent employee.

B. Operator must operate a bus a total of 190 days during the calendar year of the award.

C. To earn an award an operator must not be involved in a preventable accident during the calendar year of the award.

Accident preventability will be determined through an investigation by the operator's Division Superintendent or his representative in accordance with the National Safety Council's "A Guide To Determine Accident Preventability" and the standard operating procedures of WMATA when published.

D. An operator who fails to make a prompt report of an accident in which he is involved and of which he has or could reasonably be expected to have knowledge is disqualified for an award for that year.

E. There will be awards for consecutive years of safe driving.

1. When an operator fails to earn an award due solely to illness or legitimate absences in any year, the sequence of consecutive award years will not be broken, provided he earns an award in the next year that he operates a sufficient number of days to qualify.

2. If a consecutive award winner is disqualified for other than legitimate absences or illness, he will again receive a consecutive award when the consecutive award years exceed the years in the previous consecutive award period.

F. There will be awards for accumulative years of safe driving.

G. These rules are effective beginning with the year of 1973 in all instances where records are available from predecessor companies and are adequate to show days worked, preventability of accidents and the prompt reporting of accidents. These rules are not retroactive prior to 1973, but records of predecessor companies showing safe driver awards will be accepted in determining the number of years of safe driving and the types of awards to be made to individual operators.

II. Awards For Safe Driving

A. One year to five years of safe driving either consecutive or accumulative

   1. Award a lapel pin with two replaceable discs to indicate the number of consecutive years and the number of accumulated years of safe driving.

   2. Award a shoulder patch each year indicating total number of years of safe driving.

B. Less than five consecutive years of safe driving but over five accumulated years of safe driving

   1. Change the disc in the original lapel pin to indicate the number of accumulated years of safe driving.

   2. Award a shoulder patch indicating the number of accumulated years of safe driving.

C. Over five consecutive years of safe driving

   1. Award a diamond-studded lapel pin with two replaceable discs to indicate the number of consecutive years of safe driving and the number of accumulative years of safe driving. Discs will be replaced each year an award is earned thereafter.

   2. Award a shoulder patch each year indicating the total number of years an award has been earned.

D. Ten consecutive years of safe driving

   1. Award a stainless steel wrist watch.

E. Fifteen consecutive years of safe driving

   1. Cash award ($50 Savings Bond)

F. Twenty consecutive years of safe driving

   1. Award a gold wrist watch.

G. Twenty-five consecutive years of safe driving

   1. Award a gold clock with engraved plate (for wall or mantel).

   2. Award a gold-lettered shoulder patch indicating total number of years of safe driving after 5 accumulated years of safe driving.